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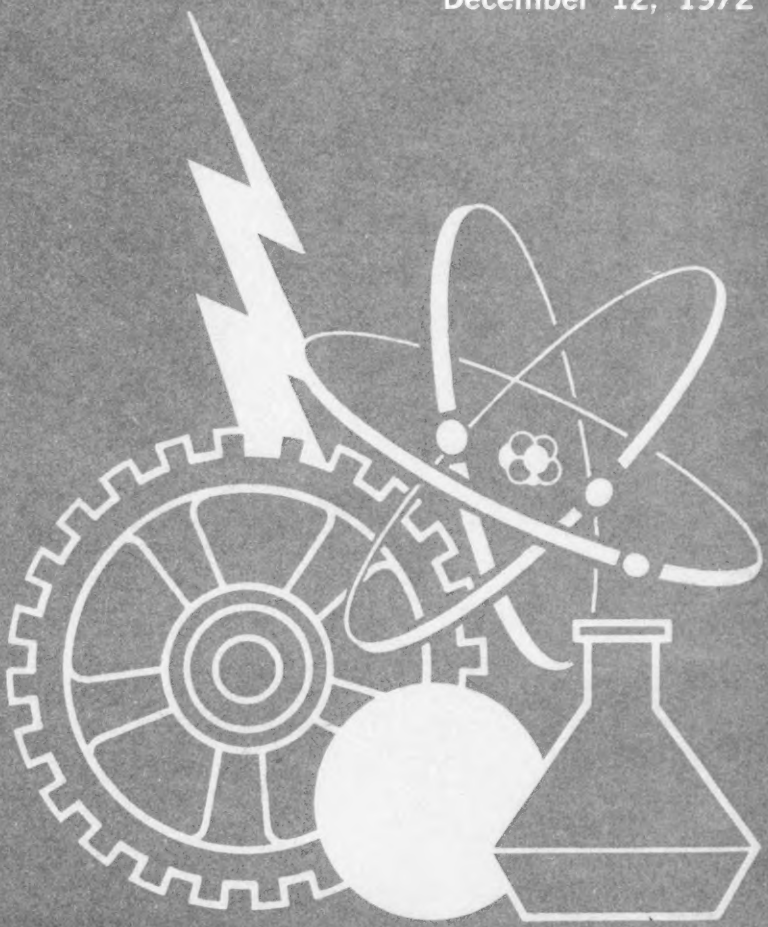

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PATENT OFFICE NOTICES

Machine Search Service

The mechanized retrieval system formerly used by the Patent Office in making examiner searches in the field of steroids has been replaced by the ICIREPAT Shared System for this field (System ST). This new system is based upon the original U.S. Patent Office system, with certain additions and modifications. Following are the changes that have been or are being effected:

1. Two sub-systems have been created, one for steroid structures and the other for processes which produce steroid structures.
2. Patents relating to seco, nor, homo- and hetero steroids are within the scope of the new ICIREPAT system and are being added to the system.
3. The new system does not at this time include U.S. patents issued prior to 1965. It is anticipated that U.S. patents from 1961–1964 will be added. To date, no plans have been made for the indexing of non-patent literature.
4. Foreign patents relating to structures and processes within the scope of the sub-systems are being indexed by cooperating foreign patent offices.
5. The ICIREPAT structure sub-system includes substantially the same capabilities for searching compounds as the old system; the card format, however, has been modified.
6. Both the manual and the code sheet have been revised to reflect these additions and modifications as well as a number of other minor changes. The manual is still under revision; however, draft copies are available to users of the system.

The ICIREPAT System ST is offered for public use under the conditions and procedures prescribed herein.

This system is available as a punched card file for an initial fee of $40.00. The instruction manual is still under revision; however, as noted above, draft copies are provided with the card file. A renewal fee of $35.00 per year entitles the subscriber to receive cards for newly issuing patents as well as for older documents (i.e., those indicated in items 2, 3 and 4 above) as these cards become available.

This file which presently exists for mechanized searching consists of:

Field	Class	Subclass	File content [1]
Steroid	260	239.5+	1,937 U.S. Patents.
		397+	1,111 Foreign Patents.

[1] Approximate number of documents in the files as of October 1, 1972.

A substantial portion of the instruction manual is devoted to the technique of preparing the code sheet which is the means provided for expressing the search query for machine handling. Effective use of the mechanized search system and the achievement of competent results are dependent upon understanding and care in applying the coding information offered in this publication.

The Patent Office will accept requests for machine searches submitted on code sheets prepared in accordance with instructions contained in the aforedescribed manual. Requests received in any other form will not be accepted, as the Patent Office will not assume the responsibility for the formulation of a search query or the representation of a query in coded form. The Patent Office will, however, provide assistance to persons seeking aid in resolving specific questions which may arise in completing the code sheet prior to submitting the search request. The code sheet serves as the query form for searches on this system.

One or more Examiners have been designated to provide such assistance. A request for a conference on mechanized search questions in the field of steroids may be directed to the Supervisory Primary Examiner of Group Art Unit 124.

A search constitutes all of the machine and related operations required to retrieve from a data file, information contained therein which fulfills the search instructions represented on a code sheet. When several code sheets are required to cover the full search need, each code sheet will constitute a search. A search will be considered to be complete and proper even under circumstances in which proper operation of the system produces output representing documents which, while fulfilling the coded requirements, are determined by the user to lack pertinence or relevance in any or a sufficient degree; or, conversely, fails to produce an output.

The cost per search, which includes a list of the document references retrieved, is $5.00. Copies of all U.S. and foreign patent references will be supplied, if requested as part of the search service, for additional cost at established rates, chargeable to a deposit account maintained by the search purchaser with the Patent Office.

Code sheets for the machine search file may be obtained from the Patent Office. Address requests to the Patent Office, Office of Patent Classification, Washington, D.C. 20231.

Requests for searches in the original Steroid system will still be accepted, since the revised ICIREPAT system at present includes among the U.S. patents only those which issued after January 1, 1965. The content of this original file, updating for which terminated with the issues of January 1972, is as follows:

5940 U.S. patents
111 Foreign patents
4179 Non-patent literature items

The instruction manual is entitled "Revised Steroid Search System Coding Manual," R & D Report No. 19. Copies of this manual and code sheets may also be obtained from the Office of Patent Classification, and searches may be submitted according to the same procedures and guidelines set forth above for the new ICIREPAT Steroid system.

Proposed Amendment of Rules on Restriction Practice in Patent Cases

On October 20, 1972, the Patent Office published a notice of proposed rule making on restriction practice in patent cases (37 F.R. 22625). The notice proposed to amend Title 37 of the Code of Federal Regulations by revising §§ 1.141, 1.142, 1.144, 1.145, and 1.146. In the notice, it was stated that a hearing would be held at 9:30 a.m. on December 12, 1972, in Room 11 C 24, Building 3, 2021 Jefferson Davis Highway, Arlington, Virginia.

The Patent Office has received requests from interested persons that the hearing be postponed to a later date to allow ample opportunity to consider the proposed amendments. The hearing, accordingly, will not be held at the time originally set but has been rescheduled for 2:30 p.m. on January 16, 1973, in Room 11 C 24, Building 3, 2021 Jefferson Davis Highway, Arlington, Virginia. Written views, objections, recommendations or suggestions will be considered if submitted on or before the date of the hearing.

The text of the notice as originally published is reproduced below.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Nov. 14, 1972.

DEPARTMENT OF COMMERCE

Patent Office

[37 CFR Part 1]

RESTRICTION PRACTICE

Notice of Proposed Rule Making

Notice is hereby given that, pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), as amended October 5, 1971, Public Law 92–132, 85 Stat. 364, the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising §§ 1.141, 1.142, 1.144, 1.145, and 1.146.

All persons are invited to present their views, objections, recommendations or suggestions in connection with the proposed changes to the Commissioner of Patents, Washington, D.C. 20231 on or before December 12, 1972, on which date a

hearing will be held at 9:30 a.m. in Room 11 C 24, Building 3, 2021 Jefferson Davis Highway, Arlington, Va. All persons wishing to be heard orally at the hearing are requested to notify the Commissioner of Patents of their intended appearance. Any written comments or suggestions may be inspected by any person, upon written request, a reasonable time after the closing date for submitting comments.

The proposed changes have three main purposes, (1) to clarify when a requirement for restriction may properly be made by an examiner, (2) to remove the limitation of five species if there is an allowable generic claim in the case, and (3) to provide a basis in the rules for requiring restriction to a single invention when two or more patentably different inventions are claimed in a single Markush-type claim. See "Ex parte Markush," 1925 C.D. 126 (Comm'r. Pat. 1924).

The expression "patentably different" emphasizes the importance of requiring restriction between two or more inventions only where there are unobvious differences between those inventions and separate patents can properly be granted to each invention. Otherwise due to the double patenting prohibition of 35 U.S.C. 121, multiple patents would be granted on a single invention. The proposed changes make it clear that a requirement for restriction is proper only when two or more patentably different inventions are claimed in one application.

The practice under present §§ 1.141 and 1.146 of limiting an application to five species, even though a generic claim has been allowed, has caused some problems since 1953 when the present language of section 121 of the patent statute became effective. Section 121 prohibits the use of a patent as a reference in a subsequent divisional application filed as the result of a requirement for restriction in the application on which such a patent is based. Present §§ 1.141 and 1.146 indicate that an application may be limited to five species even though an allowable generic claim appears therein. If an application is so limited to five species, the other species can be specifically protected only if refiled in a divisional application. Such applications may be filed even though the species are not patentably different from each other. Since the first patent cannot be used as a reference against the second application, limiting the number of species in the first patent would result in a second patent issuing on species which are not patentably different from the species in the first patent. The proposed changes would avoid this problem by removing from the rules the language limiting the claims in one application to five species.

The Markush-type claim practice which allows enumeration in a claim of a plurality of alternatively usable substances or members, has been sanctioned to permit the inclusion of such members in a claim when a generic term covering them is not available. Over the years, this form of claim has been used, for example, in claiming compounds having a large variety of substituent groups, and as a result, Markush-type claims are presented which are each directed to a plurality of independent and distinct inventions.

More than one invention is present in a Markush-type claim if the alternatively usable members of the Markush group are so unrelated and diverse that a prior art reference which shows one of the members and otherwise anticipates the claim could not ordinarily be used to reject under 35 U.S.C. 103 a claim reciting another of the members. In such circumstances, the claim is considered to be an improper Markush-type claim and not a generic claim. Such a claim imposes an undue burden on the Patent Office, particularly with respect to the search which would have to be made for proper examination.

The proposed changes expressly sanctioned the withdrawal of improper Markush-type claims. It should be noted that the "withdrawal" of such improper Markush-type claims would provide the applicant with the benefits of the double patenting prohibition of 35 U.S.C. 121. This benefit would not be available if such improper Markush-type claims were rejected.

The proposed changes will permit examiners to expedite prosecution and make more meaningful searches to determine whether the disclosed and claimed inventions are novel and patentable.

The text of the proposed revised rules is as follows:

§ 1.141 *Different inventions in one application.*

An application claiming two or more independent and distinct, patentably different inventions may be required to be restricted to one of the inventions. Inventions are patentably different when one is not obvious in view of the other, and they may properly appear in separate patents.

§ 1.142 *Requirement for restriction between inventions.*

(a) If two or more independent and distinct, patentably different inventions are claimed in a single application and the examiner deems that restriction is appropriate, he may require the applicant to elect for prosecution in the application a single invention, to which his claims shall be restricted. Such a requirement may be made at any time before final action in the case, at the discretion of the examiner.

(b) In an application containing a claim which enumerates alternatively usable substances or members which are so unrelated that the claim is, in fact, directed to independent and distinct, patentably different inventions, the examiner may require the applicant to elect the invention to which his claims shall be restricted. After election by applicant, such an improper claim by enumeration may be withdrawn by the examiner from further examination because more than one invention is being claimed (35 U.S.C. 121).

(c) Claims not restricted to the elected invention, if not canceled, are nevertheless withdrawn from further consideration by the examiner by the election, subject, however, to reinstatement in the event the requirement for restriction is withdrawn or overruled pursuant to a petition under § 1.144.

§ 1.144 *Petition from requirement for restriction.*

Within 2 months after the examiner's adverse reply to a request for reconsideration of a requirement for restriction, the applicant may petition the Commissioner to review the requirement. A petition will not be considered if reconsideration of the requirement was not requested. (See § 1.181.)

§ 1.145 *Subsequent presentation of claims for different invention.*

If, after an examiner's action on an application, the applicant presents a claim or claims therein directed to a patentably different invention, distinct from and independent of the invention previously claimed, the examiner may require the applicant to restrict the claims to the invention previously claimed if the amendment is entered, subject to reconsideration and review as provided in §§ 1.143 and 1.144.

§ 1.146 *Election of species.*

In an application containing a generic claim and claims directed to a plurality of independent and distinct, patentably different species embraced thereby, the examiner may require the applicant to elect that species of his invention to which his claims shall be restricted if no generic claim is finally held allowable. If a generic claim is later found allowable, the application may also contain claims to species in addition to the one elected, provided that such additional species claims are either written to be dependent from a generic claim (§ 1.75 (c)) or to otherwise include all the limitations of the generic claim.

RICHARD A. WAHL,
Acting Commissioner of Patents.

Approved: October 13, 1972.

RICHARD O. SIMPSON,
Acting Assistant Secretary for Science and Technology.

[FR Doc. 72-17925 Filed 10-19-72; 8:47 am]

Pub. in 37 F.R. 22625, Oct. 20, 1972

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PART 1—RULES OF PRACTICE IN PATENT CASES

Formula and Table Format

On February 2, 1972, notice of proposed rule making regarding the amendment of §§ 1.52 and 1.75 and the addition of a new § 1.58 of Title 37, Code of Federal Regulations, dealing with Formula and Table Format, was published in the Federal Register (37 F.R. 2520). Interested persons were given until April 30, 1972, to submit written comments, suggestions, or objections. Full and careful consideration was given to all written comments received. In view of these comments the proposed rule language has been revised. The revised rules do not now require that the formulas and tables be presented on separate bristolboard sheets but simply require them to be

presented in the specification in a form suitable for photographic reproduction.

These rule changes are intended to facilitate the microfilming of application papers and the printing of patents which contain formulas and tables in the text.

Under the new rules the text of printed patents would continue to be typeset, with formulas and tables being photographically reproduced and appearing at their proper location in the text. This procedure should result in a reduction of printing errors and costs.

This rule change also makes more liberal the size of paper permissible in patent applications.

In consideration of the comments received and pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Part 1 of Title 37, Code of Federal Regulations, is hereby amended as follows:

1. Section 1.52 is revised to read as follows:

§ 1.52 *Language, paper, writing, margins.*

(a) The specification and oath or declaration must be in the English language. All papers which are to become a part of the permanent records of the Patent Office must be legibly written or printed in permanent ink or its equivalent in quality. All of the application papers must be presented in a form having sufficient clarity and contrast between the paper and the writing or printing thereon to permit the production of readily legible copies in any number by use of photographic, electrostatic, photo-offset, and microfilming processes. If the papers are not of the required quality, substitute typewritten or printed papers of suitable quality may be required.

(b) The application papers (specification, including claims, oath, or declaration, papers as provided for in §§ 1.42, 1.43, 1.47, etc.) and also papers subsequently filed, must be plainly written on but one side of the paper. The size of all sheets of paper should be 8 to 8½ by 10½ to 13 inches (20.3 to 21.6 cm. by 26.6 to 33.0 cm.). A margin of 1½ inches (3.8 cm.) must be reserved on the left-hand side and on the top of each page of the specification, including claims. The lines must not be crowded too closely together; typewritten lines should be double spaced. The pages of the specification, including claims, should be numbered consecutively, starting with 1, the numbers being placed in the center of the bottom margins.

(c) Any interlineation, erasure, or cancellation or other alteration of the application papers as filed must have been made before the application was signed and sworn to or declaration made, and should be dated and initialed or signed by the applicant in a marginal note or footnote on the same sheet of paper to indicate such fact. No such alterations are permissible after execution of the application papers. (See § 1.56.)

2. A new § 1.58 is added to read as follows:

§ 1.58 *Chemical and mathematical formulas and tables.*

(a) The specification, including the claims, may contain chemical and mathematical formulas, but shall not contain drawings or flow diagrams. The description portion of the specification may contain tables; claims may contain tables only if necessary to conform to 35 U.S.C. 112.

(b) All tables and chemical and mathematical formulas in the specification, including claims, and amendments thereto, must be on pure white durable paper, the surface of which is calendered and smooth, in order to permit use as camera copy when printing any patent which may issue. A good grade of bond paper is acceptable; watermarks should not be prominent. India ink or its equivalent, or solid black typewriter ribbon must be used to secure perfectly black solid lines.

(c) To facilitate camera copying when printing, the width of formulas and tables as presented should be limited normally to 5 inches (12.7 cm.) so that it may appear as a single column in the printed patent. If it is not possible to limit the width of a formula or table to 5 inches (12.7 cm.), it is permissible to present the formula or table with a maximum width of 10¾ inches (27.3 cm.) and to place it sideways on the sheet, in which case the formula or table will appear printed across both columns of the page in the printed patent. Typewritten characters used in such formulas and tables must be from a block (nonscript) type font or lettering style having capital letters which are at least 0.085 inch (2.2 mm.) high (elite type). Hand lettering must be neat, clean, and have a minimum character height of 0.085 inch (2.2 mm.). A space at least ¼ inch (6.4 mm.) high should be provided between the formulas and tables and the text. Tables should have the lines and columns of data closely spaced to conserve space, consistent with high degree of legibility.

§ 1.75 [*Amended*]

3. Section 1.75 is amended by adding at the end of paragraph (d)(1) the expression "(See § 1.58(a).)."

Effective date. These amendments shall become effective on January 1, 1973, and will apply to applications filed after that date.

RICHARD A. WAHL,
Acting Commissioner of Patents.

Approved: Oct. 12, 1972.

RICHARD O. SIMPSON,
Acting Assistant Secretary for Science and Technology.

[FR Doc. 72-17727 Filed 10-17-72; 8:48 am]

Published in 37 FR 21994, Oct. 18, 1972

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,715,231, O. F. Marston, **FLEXIBLE BUOYANT ARTICLE, filed** Apr. 21, 1972, D.C., E.D. Va. (Richmond), Doc. 200-72-R, *Oliver F. Marston* v. *Thalhimer Bros., Inc.*

2,808,332, Anderson and Rapp, **PROCESS FOR FEEDING RUMINANTS AND IMPROVED FEED SUPPLEMENT THEREFOR, filed** May 22, 1972, D.C., N.D. Ill. (Freeport), Doc. 72c33, *Feed Service Corporation* v. *Kent Feeds, Inc. and Grain Processing Corporation.*

2,821,975, R. K. Thulman, **FIREPLACE CONSTRUCTION, filed** Apr .12, 1972, D.C., N.D. Ala. (Birmingham), Doc. CA 72-332, *American Standard, Inc.* v. *Martin Stamping & Stove, Inc.*

2,841,056, L. D. Hincher, **PAPER EDGE FLARING MACHINE, filed** May 18, 1972, U.S. Court of Appeals, First Circuit, Mass. (Boston), Doc. 72-1165, *Custom Paper Products Co. et al.* v. *Atlantic Paper Box Co.*

2,906,875, E. T. Molinaro, **STATION SAMPLING RADIO, filed** June 7, 1972, D.C. Md. (Baltimore), Doc. 72-589-N, *Edward T. Molinaro and Anthony P. Catanzaro* v. *Watkins-Johnson CEI Division.*

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3,039,766, G. W. Jackson, **SHOCK ABSORBER AND AIR SPRING UNIT ASSEMBLY, filed** June 22, 1972, D.C., E.D. Mich. (Detroit), Doc. 38480, *General Motors Corp.* v. *Monroe Auto Equipment Company.*

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3,052,081, M. Wallshein, **ORTHODONTIC ARCH WIRE CONSTRUCTION AND METHOD, filed** May 1, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72C551, *Melvin Wallshein* v. *G.A.C. International, Inc.*

3,178,673, J. H. Krehbiel, **WIRE CONNECTOR, filed** July 7, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1664, *Molex Inc.* v. *Aro Manufacturing Co.*

3,202,006, W. G. Lewellen, **ROTATING MECHANISM FOR PLATING BARREL OR THE LIKE, filed** June 2, 1972, D.C., E.D. Mich. (Detroit), Doc. 38390, *Imperial Industries, Inc.* v. *Rea A. York, doing business as C & R & D Industries.*

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3,634,864, J. Trachtenberg, ANTENNA FOR USE WITH AN AUTOMOBILE, filed June 23, 1972, D.C.N.J. (Trenton), Doc. C–1076–72, *Interdynamics, Inc.* v. *Budge Manufacturing Co., Inc.*

3,647,983, Fitzsimons and Phelps, KEY SYSTEM LINE CARD CIRCUIT, filed June 15, 1972, D.C., N.D. Calif. (San Francisco), Doc. C–72–1108 OJC, *San/Bar Corporation* v. *Stromberg-Carlson Corporation.*

3,660,797, J. Firestone, TELEPHONE CONNECTOR, filed June 8, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–1285–R, *Tron-Tech, Inc.* v. *Saxton Products, Inc.*

Certificates of Correction for the Week of Dec. 12, 1972

P.P. 3,156	3,625,861	3,652,185	3,669,737
D. 222,768	3,625,929	3,652,557	3,670,061
Re. 27,200	3,627,331	3,653,373	3,670,930
3,436,378	3,627,733	3,653,606	3,671,301
3,520,750	3,627,768	3,654,703	3,671,419
3,533,809	3,628,000	3,655,554	3,672,173
3,547,905	3,628,409	3,656,175	3,672,443
3,548,491	3,629,097	3,656,830	3,673,170
3,555,647	3,630,286	3,657,581	3,673,171
3,556,996	3,630,527	3,657,875	3,673,326
3,559,470	3,631,528	3,658,824	3,673,407
3,563,990	3,632,479	3,658,895	3,673,899
3,564,557	3,632,481	3,659,057	3,674,481
3,573,177	3,634,777	3,659,356	3,674,633
3,575,785	3,635,817	3,660,774	3,674,750
3,577,959	3,636,577	3,660,837	3,674,792
3,581,511	3,636,618	3,661,619	3,674,806
3,586,489	3,636,728	3,661,673	3,675,024
3,588,479	3,636,733	3,661,807	3,675,074
3,592,286	3,636,792	3,661,878	3,675,234
3,597,636	3,637,031	3,662,161	3,675,304
3,597,752	3,637,513	3,662,242	3,675,485
3,599,862	3,638,161	3,662,270	3,675,938
3,601,039	3,639,692	3,662,380	3,676,180
3,601,400	3,639,744	3,662,480	3,676,298
3,602,159	3,641,146	3,662,521	3,676,423
3,602,489	3,642,628	3,664,566	3,676,608
3,607,185	3,644,197	3,664,929	3,676,639
3,607,553	3,644,567	3,666,594	3,676,654
3,607,731	3,644,741	3,666,968	3,676,758
3,609,107	3,646,651	3,667,003	3,677,134
3,609,337	3,646,696	3,667,179	3,677,888
3,611,276	3,646,773	3,667,358	3,677,972
3,612,980	3,646,791	3,667,488	3,678,102
3,615,758	3,647,327	3,667,680	3,678,172
3,619,659	3,648,190	3,667,682	3,679,418
3,620,231	3,648,217	3,667,898	3,679,549
3,620,312	3,649,143	3,668,110	3,680,302
3,621,299	3,649,361	3,668,186	3,680,330
3,621,304	3,649,585	3,668,496	3,680,351
3,621,710	3,651,169	3,668,931	3,680,782
3,622,318	3,651,207	3,668,971	3,681,466
3,624,031	3,651,556	3,669,078	3,682,435
3,624,226	3,651,887	3,669,501	3,683,809
3,625,642	3,652,002	3,669,508	3,683,634
3,625,780	3,652,181	3,669,531	3,683,976

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents, final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,367,961, James L. Brewbaker, PREPARATION OF ESTERS BY CARBONYLATING ESTERS OF ALLYL ALCOHOLS IN THE PRESENCE OF GROUP VIII NOBLE METAL CATALYSTS, decided Apr. 28, 1972, Interference No. 96,929, claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16.

Patent No. 3,407,576, Richard T. Staunton, SELF-SUPPORTING FILTER ELEMENT, decided Oct. 31, 1972, Interference No. 97,337, claims 1, 2, 4, 5, 7 and 8.

Patent No. 3,408,438, Richard T. Staunton, METHOD OF MAKING SELF-SUPPORTING FILTER ELEMENT, decided Oct. 31, 1972, Interference No. 97,338, claims 1, 2, 3, 4, 5 and 7.

Patent No. 3,468,744, Thomas J. Reinhart, COLOR CHANGEABLE EMBOSSABLE LABEL TAPE, decided July 13, 1972, Interference No. 97,257, claims 1 and 2.

Patent No. 3,512,373, Jack H. White, REFRIGERATION SYSTEM WITH ELECTRIC AUXILIARY PRIME MOVER, decided on Oct. 12, 1972, Interference No. 97,885, claim 2.

Patent No. 3,525,616, Ernst-August Hackmann and Johannes Munder, LIGHT SENSITIVE COMBINATION OF A HALOGEN HYDROCARBON, A LEUCO TRIARYL METHANE DYE AND AN N-VINYLCARBAZOLE, decided Oct. 17, 1972, Interference No. 97,912, claims 1, 2, 3, 4 and 5.

Patent No. 3,527,894, Lee O. Mesenhimer and Neil A. Kammiller, VOLTAGE BOOSTING AND POLARITY CONTROL CIRCUIT, decided Oct. 16, 1972, Interference No. 97,908, claims 3, 4 and 5.

Patents Available for Licensing or Sale

3,591,925. LINE ANGLE DEGREE LEVEL INSTRUMENT. Frank Dupin, Box 109, Gurnee, Ill., 60031.

3,664,061. METHOD OF AND APPARATUS FOR THE DEVELOPMENT OF PLANT GROWTH. Karl Oepen, Cologne, Germany. Correspondence to: Holman & Stern, 2401 15th St. NW., Washington, D.C., 20009.

3,666,185. CRYOGENIC CRUSHING OF MATERIALS. Robert P. Williams, 12 Sioux Road, Trenton, N.J., 08638.

3,670,927. METHOD AND MEANS PROVIDING DOSAGES OF ORAL HYGIENIC SUBSTANCES. Alan M. Hubbard, 62 Hill St., Morristown, N.J., 07960.

3,671,555. TRIALKYLSILYLOXY - STEROID COMPOUNDS AND PROCESS FOR MAKING SAME. VEB Jenpharm Jena, Germany, Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,672,425. CURTAIN SUSPENSIION DEVICES WITH AN ELECTRIC MOTOR DRIVE. Riloga-Werk J. Schmidt Remscheid, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,677,543. ELASTIC PULL TYPE EXERCISER. John H. Richardson, Rte. 2, Box 680–79, Sonora, Calif., 95370.

3,692,011. WHEEL REFACER. Albert L. Reese et al., 1031 Sagamore Way, Sacramento, Calif., 95822.

3,695,727. TRACTION ATTACHMENT FOR VEHICLES. Julius Sesky et al., Chitina, Alaska, 99566.

3,697,157. MOTOR VEHICLE ALL-WEATHER FORWARD VIEW MIRROR. Jim Satcher, Jr., 12204 SW. 27th St., Miami, Fla., 33165.

3,701,354. POWER ACTUATED HAIR TEASING APPARATUS WITH FLEXIBLE CABLE DRIVE. Charles C. May, 2234 Midvale Ave., West Los Angeles, Calif., 90064.

General Motors Corporation is prepared to grant non-exclusive licenses under the following patent upon reasonable terms.

Applications for license may be addressed to: The Director, Patent Section, General Motors Bldg., 3044 W. Grand Blvd., Detroit, Mich., 48202.

3,529,492. POWER TRAIN.

The General Tire & Rubber Company is prepared to grant non-exclusive licenses at reasonable royalty rates under the following patent.

Inquiries respecting licenses should be addressed to: General Tire & Rubber Co., 1 General St., Akron, Ohio, 44309.

3,574,149. FLAME RETARDANT FLEXIBLE POLYURETHANE FOAMS.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 27 patents.

Inquiries respecting licenses should be addressed to: RCA Corporation, Staff Vice President Domestic Licensing, 1133 Avenue of The Americas, New York, N.Y., 10036.

RE. 27,490. ELECTROSTATIC PRINTING.

RE. 27,492. TELEVISION DEFLECTION SYSTEM INCLUDING AFC CIRCUIT WITH REGENERATIVE PHASE DETECTOR.

3,689,129. HIGH RESOLUTION, REDUNDANT COHERENT WAVE IMAGING APPARATUS EMPLOYING PINHOLE ARRAY.

3,689,131. LIQUID CRYSTAL DISPLAY DEVICE.

3,689,312. SPRAY METHOD FOR PRODUCING A GLARE-REDUCING COATING.

3,689,692. SOUND RECORDS AND REPRODUCING APPARATUS.

3,689,694. SPECIAL EFFECTS GENERATOR.

3,689,913. CONVERSION TO A DIGITAL CODE WHICH IS SELF-CLOCKING AND ABSOLUTE PHASING.

3,689,914. WAVEFORM GENERATOR.

3,690,889. PHOTOCOLORABLE VACUUM SUBLIMED XANTHENE DYE.

3,690,943. METHOD OF ALLOYING TWO METALS.

3,690,944. ELECTROLESS NICKEL PLATING METHOD.

3,691,338. SOLID STATE MICROWAVE HEATING APPARATUS.

3,691,444. REMOTE CONTROLLED TELEVISION TUNER MOTOR SWITCHING CIRCUIT.

3,691,978. APPARATUS FOR THE AUTOMATIC NAVIGATION OF A SAILING VESSEL.

3,692,592. METHOD AND APPARATUS FOR DEPOSITING EPITAXIAL SEMICONDUCTIVE LAYERS FROM THE LIQUID PHASE.

3,692,593. METHOD OF FORMING SEMICONDUCTOR DEVICE WITH SMOOTH FLAT SURFACE.

3,692,594. METHOD OF FORMING AN EPITAXIAL SEMICONDUCTIVE LAYER WITH A SMOOTH SURFACE.

3,692,655. METHOD OF RADIO FREQUENCY SPUTTER ETCHING.

3,692,918. AUTOMATIC REGISTRATION OF COLOR TELEVISION CAMERAS.

3,692,931. TELEVISION IMAGE CONTROL CIRCUIT.

3,692,932. HORIZONTAL OSCILLATOR DISABLING CIRCUIT CONTROL APPARATUS.

3,693,030. TIME DELAY CIRCUITS.

3,693,118. VARIABLE TUNING ARRANGEMENT FOR A STRIP TRANSMISSION LINE CIRCUIT.

3,694,275. METHOD OF MAKING LIGHT EMITTING DIODE.

3,694,719. SCHOTTKY BARRIER DIODE.

3,694,756. MIXER CIRCUIT.

The Clary Corporation offers to sell or grant licenses on reasonable terms under the following 35 patents.

Inquiries regarding these patents should be addressed to: Patent Department, Clary Corporation, 408 Junipero Serra Drive, San Gabriel, Calif., 91776.

2,818,018. TYPE WHEEL SELECTING AND PRINT ACTUATING MEANS.

2,894,449. SALES TRANSACTION MACHINE.

2,910,936. PRINTER MECHANISM.

2,915,968. PRINTER.

2,916,989. PRINTING APPARATUS.

2,981,179. PRINTER.

2,981,466. READ-OUT SYSTEM FOR A VALUE REGISTERING DEVICE.

3,001,470. BOOKKEEPING MACHINE.

3,010,647. MERCHANDISE REGISTERING APPARATUS.

3,028,063. PAPER FEEDING APPARATUS.

3,028,080. DATA TRANSLATING AND REGISTERING SYSTEM.

3,031,954. CARD PRINTING MACHINE.

3,034,692. STRIP FEEDING DEVICE.

3,036,292. READ-OUT SYSTEM.

3,043,214. INKING DEVICE.

3,058,638. PAPER FEEDING APPARATUS.

3,077,589. READ-OUT SYSTEM.

3,090,298. HIGH SPEED PRINTING SYSTEM.

3,101,664. PRINTER.

3,128,695. PRINTER.

3,136,243. PRINTER.

3,136,989. READ-OUT AND CODE TRANSLATING SYSTEM.

3,168,948. PULLEY SELECTION MEANS IN ROTARY TYPE CARRIERS.

3,198,306. WIRE MATRIX PRINTER.

3,216,348. HAMMER TIMING MEANS IN A HIGH SPEED BELT PRINTER.

3,279,363. PRINTING SYSTEM.

3,291,042. HIGH SPEED PRINTING MECHANISM.

3,294,212. PAPER LOADING DEVICE FOR DATA PRINTER.

3,310,147. WHEEL STRIKING DATA PRINTER.

3,344,722. DATA RECORDER.

3,350,005. TEN KEY PRINTING CALCULATING MACHINE.

3,378,127. DATA PRINTER WITH FLEXIBLE PRINT WHEEL.

3,388,782. SERIAL DATA PRINTER HAVING PLURAL HAMMERS ACTUATED IN SEQUENCE.

3,419,678. DATA PRINTING SYSTEM.

3,539,779. PERFORATED CARD CONTROLLED REGISTERING MACHINE.

The General Electric Company is prepared to grant nonexclusive licenses under the following 81 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be addressed to: General Electric Company, Patent Counsel, Housewares Business Division, 1285 Boston Ave., Bridgeport, Conn., 06602.

3,497,974. STEAM IRON SPRAY VALVE STRUCTURE.

Applications for license under the following patent may be addressed to: Division Patent C Counsel, AC Motor & Generator Business Div., 1 River Road, Bldg. 41, Room 106, Schenectady, N.Y., 12305.

3,684,906. CASTABLE ROTOR HAVING RADIALLY VENTING LAMINATIONS.

Applications for license under the following 5 patents may be addressed to: General Electric Co., Transformer and Distribution Equipment Business Div., Bldg. 43, Room 529, 100 Woodlawn Ave., Pittsfield, Mass., 01201.

3,365,535. TRANSFORMER ENCLOSURE AND LOCKING MEANS THEREFOR.

3,580,714. DISCHARGE CONTROL ELEMENT FOR GLASS-MELTING FURNACE.

3,621,374. VOLTAGE REGULATOR WITH ZERO CURRENT STATIC SWITCHING BETWEEN TAPS FOR A REGULATOR TRANSFORMER.

3,621,375. VOLTAGE REGULATOR WITH ZERO CURRENT STATIC SWITCHING BETWEEN TAPPED PORTIONS OF THE PRIMARY OF A REGULATOR TRANSFORMER.

3,641,359. MONITOR CIRCUIT FOR VACUUM TYPE ELECTRIC CIRCUIT INTERRUPTER.

Applications for license under the following 6 patents may be addressed to: Patent Counsel, LSTG–I & MT Divisions, General Electric Company, 1 River Road, Bldg. No. 43, Schenectady, N.Y., 12305.

3,546,757. METHOD OF MANUFACTURING A VARIABLE CAPACITANCE TRANSDUCER.

3,637,319. METHOD FOR DUAL MODE CONTROL CHANGE-OVER IN A STEAM TURBINE.

3,652,889. LAMINATED DYNAMOELECTRIC MACHINE CORE AND METHOD OF STACKING.

3,659,956. WELDED INLET PIPE AND NOZZLE BOX CONSTRUCTION FOR A STEAM TURBINE.

3,660,705. POLYPHASE GENERATOR WINDINGS.

3,667,430. MODULAR COMBINED MOISTURE SEPARATOR AND REHEATER.

Applications for license under the following 9 patents may to addressed to: General Electric Company, Appliance Components Business Division, 1635 Broadway, Fort Wayne, Ind., 46804. Attn.: Patent Counsel.

3,421,034. SINGLE-PHASE INDUCTION ELECTRIC MOTOR.

3,573,510. CUSHION THRUST WASHER.

3,628,240. METHOD AND APPARATUS FOR TREATING MAGNETIC CORES AND WINDINGS.

3,648,214. CONDITION-RESPONSIVE ELECTRIC SWITCH MECHANISM.

3,651,445. LAMPHOLDER.

3,668,779. METHOD OF MANUFACTURING DOUBLE INSULATED PLUGS.

3,673,532. THERMAL SWITCH MECHANISM.

3,678,436. MAGNETIZING APPARATUS AND METHOD.

3,685,773. RESILIENT MOUNTING ARRANGEMENT FOR ROTATING MACHINES AND METHOD OF PRODUCING SAME.

Applications for license under the following 15 patents may be addressed to: General Electric Company, Construction Materials Division, 1701 College St., Fort Wayne, Ind., 46804. Attention: Division Patent Counsel.

2,858,478. APPARATUS FOR FLASHING FLUORESCENT LAMPS.

2,878,421. BALLAST APPARATUS.

2,965,799. FLUORESCENT LAMP BALLAST.

3,010,050. BALLAST APPARATUS.

3,201,646. BALLAST APPARATUS UTILIZING TEMPERATURE RESPONSIVE FUSE.

3,222,572. APPARATUS FOR OPERATING ELECTRIC DISCHARGE DEVICES.

3,225,255. BALLAST APPARATUS.

3,265,930. CURRENT LEVEL SWITCHING APPARATUS FOR OPERATING ELECTRIC DISCHARGE LAMPS.

3,374,396. STARTING, CURRENT LIMITING AND VOLTAGE STABILIZING CIRCUIT HIGH INTENSITY ARC DISCHARGE LAMPS.

3,386,063. TEMPERATURE RESPONSIVE FUSES AND APPARATUS EMBODYING SUCH FUSES.

3,648,207. APPARATUS FOR STARTING AND OPERATING ELECTRIC DISCHARGE LAMPS.

3,648,506. APPARATUS AND METHOD FOR WINDING ELECTRICAL COILS.

3,655,906. LAMP BALLAST AND METHOD OF PRODUCING SAME.

3,679,931. APPARATUS FOR OPERATING ELECTRIC DISCHARGE LAMPS AND AUXILIARY LIGHTING LAMPS.

3,659,197. APPARATUS FOR ELECTRICALLY TESTING A COIL INCLUDING A PRIMARY COIL AND CORE, A PICK UP COIL, AND LIMITED SUPPLY OF HIGH VOLTAGE D.C. FOR ENERGIZING THE PRIMARY COILS.

Applications for license under the following 44 patents may be addresed to: The Patent Counsel, General Electric Company, Industrial and Power Capacitor Products Department, John Street, Hudson Falls, N.Y., 12839.

2,665,400. ELECTRIC CAPACITOR.

2,760,121. ELECTRIC PROTECTIVE DEVICE.

2,819,429. ELECTRIC PROTECTIVE EQUIPMENT.

2,819,492. ELECTRICAL CAPACITOR AND METHOD OF MAKING THE SAME.

2,922,937. CAPACITOR AND DIELECTRIC MATERIAL THEREFOR.

2,947,927. ELECTRIC CAPACITOR AND DIELECTRIC MATERIAL THEREFOR.

3,025,440. ELECTRICAL DEVICE AND DIELECTRIC MATERIAL THEREFOR.

3,133,238. ELECTRICAL CAPACITOR CONSTRUCTION TO REDUCE SHOCK HAZARD.

3,137,545. ALLOY FOR BONDING METALS TO CERAMICS.

3,144,371. METHOD OF PRODUCING DRY TYPE CAPACITORS.

3,153,180. ELECTRICAL CAPACITOR AND METHOD OF MAKING THE SAME.

3,155,876. ELECTRICAL CAPACITOR PROTECTIVE ARRANGEMENT.

3,185,906. PALIGORSKITE DIELECTRIC CAPACITOR.

3,225,276. ELECTRICAL CAPACITOR WITH THERMAL FUSE.

3,229,174. ROLLED CAPACITOR AND TERMINAL CONNECTION THEREFOR.

3,231,701. CAPACITOR PROTECTIVE SYSTEM.

3,235,780. ELECTRICAL CAPACITOR AND METHOD OF MAKING THE SAME.

3,236,976. FUSE DEVICE.

3,242,401. ELECTRICAL CAPACITOR AND DIELECTRIC MATERIAL THEREFOR.

3,242,402. ELECTRICAL CAPACITOR AND DIELECTRIC MATERIAL THEREFOR.

3,247,355. SOLDERING MACHINE.

3,247,454. DIELECTRIC TESTING APPARATUS INCLUDING A MOVABLE TABLE FOLLOWING A PREDETERMINED PATH.

3,252,830. ELECTRIC CAPACITOR AND METHOD FOR MAKING THE SAME.

3,256,472. ELECTRICAL CONNECTING STRUCTURE FOR ROLLED CAPACITORS.

3,259,816. ELECTRICAL CAPACITOR WITH A PLASTIC DIELECTRIC.

3,274,663. ELECTRICAL CAPACITOR AND METHOD OF MAKING THE SAME.

3,275,886. INTERRUPTED ARC RESPONSIVE PROTECTIVE EQUIPMENT FOR SERIES CAPACITORS.

3,287,613. VARIABLE CAPACITOR.

3,292,061. ELECTRICAL CAPACITOR WITH A POLYPHENYLENE ETHER DIELECTRIC.

3,296,509. CAPACITOR WITH POLYPHENYLENE OXIDE DIELECTRIC.

3,302,081. CAPACITOR ASSEMBLY WITH HIGH RESISTANCE SHUNT.

3,328,654. CAPACITOR WITH A POLYCARBONATE DIELECTRIC.

3,335,343. ELECTRICAL CAPACITOR.

3,335,345. HIGH TEMPERATURE CAPACITOR.

3,363,156. CAPACITOR WITH A POLYOLEFIN DIELECTRIC.

3,365,632. WOUND CAPACITOR.

3,377,510. ELECTRICAL APPARATUS.

3,395,207. METHOD OF REDUCING DISSIPATION FACTOR OF POLYPHENYLENE OXIDE.

3,407,562. CAPACITOR ASSEMBLY METHOD.

3,423,655. DIELECTRIC LIQUID EPOXIDE SCAVENGER.

3,424,957. ELECTRICAL CAPACITOR AND DIELECTRIC MATERIAL THEREFOR.

3,444,602. ELECTRICAL CAPACITOR AND METHOD OF MAKING THE SAME.

3,447,048. ELECTRIC CAPACITOR WITH EXTENDED WICKING.

3,450,968. ELECTRICAL ELEMENTS WITH IMPREGNATED DIELECTRIC AND INSULATORS.

Erratum

In the OFFICAL GAZETTE of Nov. 7, 1972, the following patent listed as being available for licensing or sale offered by: Robert E. Hall, Arlington, Va. Correspondence to: Mrs. A. H. Cravens, 1619 N. Highland St., Arlington, Va., 22201, should read as follows:

2,730,207. COLLAPSIBLE TOWER AND HOIST.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 28, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries, Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-19-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-16-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-09-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-30-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director.. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-09-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	4-05-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	12-13-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director..... Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-21-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director.. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-21-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-29-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director..... Industrial Arts: Household, Personal and Fine Arts.	4-15-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-30-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director..... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	9-01-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	10-27-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	12-22-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director..... Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-15-71

Expiration of patents: The patents within the range of numbers indicated below expire during December 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,725,558 to 2,728,912, inclusive
Plant Patents..... Numbers 1,436 to 1,441, inclusive

REISSUES

DECEMBER 12, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,529

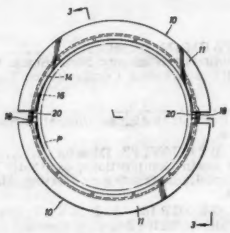
GALVANIC ANODE

Gordon L. Doremus, 7555 Haywood Drive 77017, and Jack G. Davis, 3600 Montrose, Apt. 405 77006, both of Houston, Tex.

Original No. 3,616,422, dated Oct. 26, 1971, Ser. No. 817,916, Apr. 21, 1969. Application for reissue Aug. 7, 1972, Ser. No. 277,381

Int. Cl. C23f *13/00*

U.S. Cl. 204—197 14 Claims



A galvanic anode adapted particularly for the cathodic protection of relatively large diameter pipelines submerged in water bodies. The anode consists of *at least* a pair of [semicylindrical] *arcuate* segments constructed of a suitable galvanic metal and having completely embedded within the galvanic metal steel core or armature sections, adapted to be connected together to join the anode sections into a "bracelet" about the pipe.

27,530

LAND LEVELING IMPLEMENT

James L. Mitchell, Meridian, Miss., assignor to Midland Manufacturing Co. Inc., Memphis, Tenn.

Original No. 3,534,821, dated Oct. 20, 1970, Ser. No. 665,105, Sept. 1, 1967. Application for reissue May 17, 1971, Ser. No. 144,027

Int. Cl. E02f *3/76*

U.S. Cl. 172—780 10 Claims

A land leveling implement adapted to be trailingly drawn by a tractor. The implement includes a long frame, slide type runner members on the forward and rearward ends of the frame, an earth working member mounted at the middle of the frame, and trip means or unloader means including land running wheels for raising the earth working member when the tractive effort or draft force on the implement reaches a certain point.

27,531

AMYLOSE COATED, FRIED POTATO PRODUCT AND PROCESS FOR PREPARING THE SAME

Daniel G. Murray, Muscatine, Iowa, and Nicholas G. Marotta, Green Brook, and Richard M. Boettger, Morristown, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Original No. 3,597,227, dated Aug. 3, 1971, Ser. No. 718,356, Apr. 3, 1968, which is a continuation-in-part of applications Ser. No. 412,818 and Ser. No. 412,843, Nov. 20, 1964, both now abandoned. Application for reissue Oct. 4, 1971, Ser. No. 186,505

Int. Cl. A23l *1/12*

U.S. Cl. 99—100 P 4 Claims

A process for preparing deep fried potato products, including potato chips, french fried potatoes, and specialty products which are all characterized by their improved quality and the products thus produced; said process comprising the coating of such potato products, prior to the deep frying thereof in a hot cooking oil, with an aqueous dispersion of a high amylose starch or the amylose fraction resulting from the separation of whole starch into its amylose and amylopectin components.

27,532

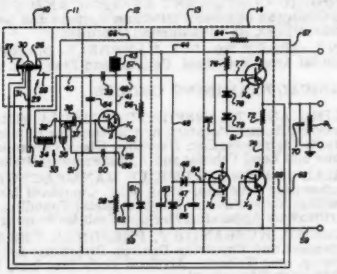
POSITION DETECTING TRANSDUCER

Harold D. Morris, Pleasant Hills, Calif., assignor to Systron-Donner Corporation, Concord, Calif.

Original No. 3,074,279, dated Jan. 22, 1963, Ser. No. 794,487, Feb. 4, 1959. Application for reissue Apr. 24, 1970, Ser. No. 31,578

Int. Cl. G01p *15/08*

U.S. Cl. 73—517 R 20 Claims



Position detecting transducer for measuring acceleration having a conducting planar element and means for mounnting said planar element for angular movement. A magnet is provided and a coil is disposed in the magnetic field of said magnet and is secured to said planar element for angular movement with said conducting planar element. An inductive pickoff element consisting of a pair of coaxial windings is provided with the windings lying in a plane substantially parallel to the plane of the conducting element and on one side of the conducting element. Means is provided for applying excitation to

the pickoff element to establish a magnetic field with the conducting element being positioned relatively close to the pickoff element so that the coupling between the windings is disturbed and losses are reflected into the windings by the conducting element. Detector means is connected to said means for supplying excitation to the pickoff element to give an indication of the position of the conducting element relative to the pickoff. Feedback means is coupled to said detector means for applying a current to said coil proportional to the displacement of the conducting planar element. The means for applying excitation to the inductive pickoff element consists of an oscillator which normally oscillates continuously. The oscillator includes a tank circuit and a feedback circuit. One of the windings of the inductive pickoff element is connected into the tank circuit of the oscillator to form a part of the tank circuit and the other of the windings is connected into the feedback circuit of the oscillator. The output of the oscillator is modulated by variations in spacing between the conducting element and the inductive pickoff element. Additional feedback means couples the detector means to the oscillator to change the gain of the oscillator to thereby control the loop gain and the frequency response of the transducer.

PLANT PATENTS

GRANTED DECEMBER 12, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,267
FLOWERING CRABAPPLE TREE
William H. Collins, Circleville, Ohio, assignor to Cole Nursery Company, Inc., Circleville, Ohio
Filed Feb. 8, 1971, Ser. No. 113,774
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of flowering crabapple tree, *Malus cultivar*, having an abundance of small, glossy, bright to dark red fruits, well distributed and displayed on the upper two-thirds of the plant that persist in a firm and attractive condition after leaf drop and well into late fall or early winter or later, with such glossiness persisting even after the fruits start to shrivel; relatively large, leathery, dark green, glossy foliage that holds late; and a sturdy, straight trunk, the stiff scaffold branches diverging at wide or nearly wide angles to the trunk assuring strong crotch structure, resulting in a small tree of sturdy upright compact branching habit.

3,268
PEONY PLANT
Carl G. Klehm, 2 E. Algonquin Road, Arlington Heights, Ill. 60005
Filed Feb. 18, 1971, Ser. No. 116,687
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of peony plant of the species botanically known as *Paeonia lactiflora*, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a vigorous and strong plant habit, exceptionally thick, stout and strong stems, large, thick and clean foliage, extremely large, many-petalled and high-crowned flowers of a fully double-rose type form and the petals of which unfold with a "crater" effect of seemingly unending ruffled petals, a distinctive and attractive light red flower color, and especial suitability for garden and landscape use, including border or background uses for other flower settings, as well as for cut-flower use.

3,269
PEONY PLANT
Carl G. Klehm, 2 E. Algonquin Road, Arlington Heights, Ill. 60005
Filed Feb. 18, 1971, Ser. No. 116,688
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of peony plant of the species botanically known as *Paeonia lactiflora*, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a short, petite and compact habit of growth, with a balanced and vigorous root system, clean, disease free, lush green shoots, stems and foliage, a full-double, slightly flat rose type bloom form, with no stamens or carpels, a distinctive and attractive vivid coral pink flower color, with deeper highlights and a slight silver petal edging, and especial suitability for garden and landscape plantings, including neat and formal hedges, as well as groupings with other perennial settings.

3,270
PEONY PLANT
Carl G. Klehm, 2 E. Algonquin Road, Arlington Heights, Ill. 60005
Filed Feb. 22, 1971, Ser. No. 117,845
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of peony plant of the species botanically known as *Paeonia lactiflora*, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a short but strong habit of growth, a balanced, vigorous, clean and disease-free root system, disease-free shoots, stems and foliage of a lush, bright green color, a medium flower size, a frilly and ruffled bomb-shaped flower form, with slightly atropic carpels and no stamens, a distinctive and attractive color of the flowers which have a double row of pure white, notched guard petals dorsalled with 6 to 9 rows of lemon yellow petaloids and true petals which are dorsalled again with 15 to 30 slightly larger and ruffled light pink petals, and especial suitability for cut-flower and garden landscape uses, and for borders and backdrops for other flower settings.

3,271
PEONY PLANT
Carl G. Klehm, 2 E. Algonquin Road, Arlington Heights, Ill. 60005
Filed Feb. 22, 1971, Ser. No. 117,846
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of peony plant of the species botanically known as *Paeonia lactiflora*, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an extremely vigorous plant habit, strong, stout, tall and straight stems, very large flowers of fully double-rose type form, a distinctive and attractive blend of cherry red, rose red and vivid rose pink flower colors, with a slight moon silver petal edging, and especial suitability for cut-flower uses.

PATENTS

GRANTED DECEMBER 12, 1972

GENERAL AND MECHANICAL

3,705,426

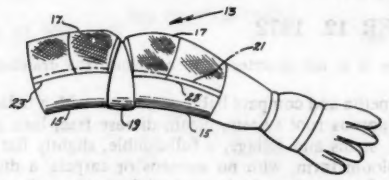
PRESSURE SUIT JOINT SYSTEM

Alfred L. Marcum, Jr., Centerville, Ohio; Marvin Burns, Wilmette, and Richard A. Rodzen, Bolingbrook, both of Ill., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Aug. 27, 1971, Ser. No. 175,532

Int. Cl. B63c *11/04*

U.S. Cl. 2—2.1 A **6 Claims**



An improved, single plane, soft joint for use as elbow and knee joint systems in a pressure suit wherein increased comfort and freedom of motion is achieved by constructing the joint-covering portions of the suit with fabrics of differing degrees of extensibility on the compression and extension sides of the joint and by applying a tapered band near the pivotal plane of the joint to maintain constant volume at all degrees of flexure.

3,705,427

BLANK AND DRESS MADE THEREFROM

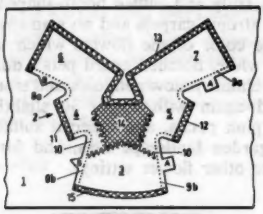
Wera Schroner, Aschaffenburg am Main, Germany, assignor to Flotti Puppenkleiderspiele Gesellschaft mit beschrankter Haftung, Bruchsal, Germany

Filed Jan. 8, 1968, Ser. No. 696,309

Claims priority, application Germany, Jan. 31, 1967, SCH 41921

Int. Cl. A41d *1/00*

U.S. Cl. 2—74 **2 Claims**



A strip of material for the production of clothing, particularly for the production of doll's dresses, comprises a blank defined by cutting lines and seam areas directly on the material, the seam areas having adhesive thereon for securing the seams together.

3,705,428

FLUSHING APPARATUS

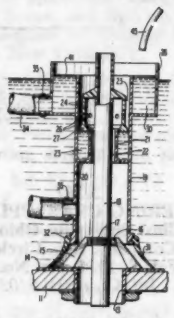
James W. Braswell, 218 Hooker Road, Wilmington, N.C.

Filed May 24, 1971, Ser. No. 146,159

Int. Cl. E03d *1/34*

U.S. Cl. 4—58 **19 Claims**

A flushing apparatus particularly for plumbing fixtures embodies only one main moving part which is adapted alternately to receive water and serve as a weight for closing the main flush valve and to discharge said water and in so doing to become a float for opening the flush valve. The main flush valve is essentially self-cleaning and non-corrosive. The entire



apparatus is characterized by simplicity, economy of construction, silent operation and reliability. Maintenance requirements are minimized and the apparatus is adaptable to new or old fixtures.

3,705,429

INFLATABLE LOAD SUPPORTING STRUCTURES

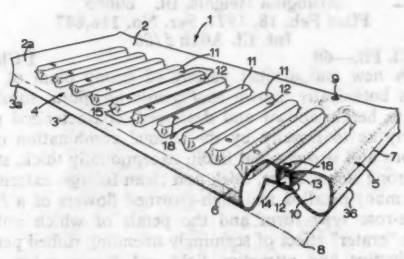
Walter P. Nail, 260 Renforth Drive, Etobicoke, Ontario, Canada

Filed Jan. 6, 1970, Ser. No. 885

Claims priority, application Canada, Jan. 9, 1969, 039,632

Int. Cl. A47c *27/08*

U.S. Cl. 5—349 **6 Claims**



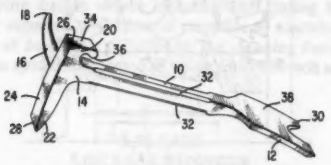
The invention is an inflatable structure which has both shape and load control achieved by locating a plurality of inflatable beams columns or chambers within an outer inflatable chamber, all formed of flexible substantially non expansible (limited stretch) air impervious material, the beams columns or chambers being connected to opposed walls of the outer chamber to limit their separation and being constructed and arranged to preclude transfer of air between the interior thereof and the outer chamber in at least certain directions, the beams or columns being side by side or spaced as desired relative to each other in accordance with the intended load and the connections between the beams or columns and the opposing walls of the outer chamber including connections extending in different directions to give stability under load.

3,705,430

MINIATURIZED FORCIBLE ENTRY TOOL

Theodore Ziaylek, Jr., P.O. Box 292, Yardley, Pa.

Filed May 21, 1971, Ser. No. 145,645
Int. Cl. B25f *1/100*
U.S. Cl. 7—9 5 Claims



A forcible entry tool is provided having a shank portion, a tail portion and a head portion. The head consists of a spike extending normal to the axis of the shank and wedge and wrench portions extending mutually opposite from each other along a line extending generally normal to both the extension of the shaft and that of the spike. The wedge and wrench portions consist of approximately equal masses so that when an impact is applied to an object by the spike portion, any lateral turning moment about the spike is minimized.

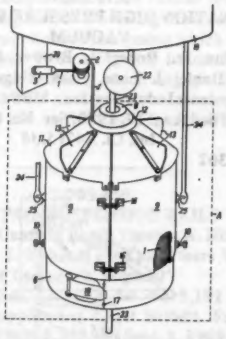
The wrench is formed as an extension of the wedge portion and presents an arcuate upper surface extending between the two so that when the wedge is used, a greater fulcrum distance is provided than heretofore known. Furthermore, in using the wrench portion, both the shank portion and the wedge may be utilized as a dual handle system for applying additional torque to a hose coupling and the like. The shank may be formed to bend away from the side presenting the wrench to facilitate the application of torque to a hose coupling when using the wrench.

3,705,431

MOORING DEVICES

Samuel Bell, and Leslie Gerald Bullen, both of Dartmouth, Nova Scotia, Canada, assignors to Electric & Musical Industries Limited, Middlesex, England

Filed May 7, 1970, Ser. No. 35,544
Claims priority, application Great Britain, May 7, 1969, 23,191/69
Int. Cl. B63b *21/52*
U.S. Cl. 9—8 R 4 Claims



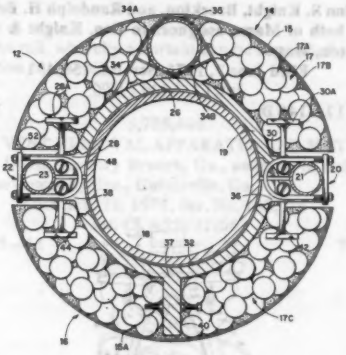
A mooring device includes a tethering cable for tethering a buoyant object, at least one instrument package assembly attached to the buoyant object and through part of which at least the tethering cable passes, connecting cable connecting the buoyant object and the instrument package assembly and formed into a coiled configuration, and means for releasing the instrument package assembly from the buoyant object so that it can be allowed to fall from the buoyant object under its own weight down the tethering cable to a depth predetermined by the available length of the connecting cable. Preferably the arrangement is such that the connecting cable is wrapped round the tethering cable as the instrument package assembly falls and the connecting cable is electrically conductive.

3,705,432

SECURING DEVICE FOR A FLOTATION ASSEMBLY

Louie W. Watkins, Jr., Brookline, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.

Filed May 25, 1971, Ser. No. 146,694
Int. Cl. F21b *15/02*; B63b *21/52*
U.S. Cl. 9—8 R 5 Claims



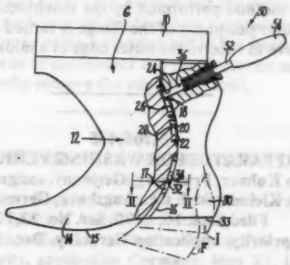
A flotation assembly for a riser pipe generally includes a pair of elongated semiannular flotation collars fabricated in part of a buoyant material and each including a pair of spaced clamps useful in attaching the collars about the riser pipe. These clamps are preferably imbedded within an inner surface of the collar. The present invention is directed to securing devices for retaining the clamps, and in turn the collars, in place tightly against the riser pipe. These securing devices also hold the choke and kill lines, conventionally associated with a riser pipe, in place adjacent the riser pipe.

3,705,433

FOOT FORM AND SHOEMAKING METHOD

Ivan Stoddard, Sutton-in-Ashfield, and Terence D. Broughton, Kirkby-in-Ashfield, both of England, assignors to USM Corporation, Flemington, N.J.

Filed March 8, 1971, Ser. No. 122,082
Claims priority, application Great Britain, March 6, 1970, 10,773/70
Int. Cl. A43d *3/00*
U.S. Cl. 2—133 R 3 Claims



A foot form for injection molding string lasted footwear in which the heel portion of the form is movable between foreshortened, intermediate, and extended conditions, with means for locking the form in such conditions. The shoemak-

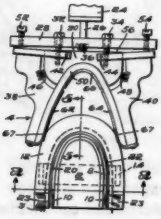
ing method includes the steps of mounting a loose shoe upper having a lasting string in the margin on the form in foreshortened condition, tensioning the string to partially last the upper on the foreshortened last, moving the heel portion of the form to extended condition to fully tension the string and last the upper, and injection molding a shoe bottom on the lasted upper.

3,705,434

STITCHDOWN COUNTER MOLDING, FLANGING AND WRAPPING MACHINE

Chesterton S. Knight, Brockton, and Randolph H. Baker, Foxboro, both of Mass., assignors to Geo. Knight & Co., Inc., Brockton, Mass.

Filed June 7, 1971, Ser. No. 150,451
Int. Cl. A43d *11/00*
U.S. Cl. 12—146 D **13 Claims**



A machine for molding the back part of a shoe upper into stitchdown configuration. The lower edge of the back part which preferably includes a thermoplastic counter is turned outwardly in two stages; the first stage occurring when a resilient molded liner of a female mold is clamped about the male mold to cause the counter to adhere to the back part over their engaging surfaces. Simultaneously, a partially formed flange is created by the interaction of a flanging plate on the bottom of the male mold and creasing blades on the bottom of the molded liner. In the second stage, an adjustable gauging plate initially used to locate the back part in proper vertical position with respect to the mold moves upward past the flanging plate to engage the partially formed flange, to press it against the underside of the creasing blades and to hold it there for a sufficient time to allow the counter to set in the finished stitchdown configuration. The invention also includes the method performed by the machine. In a modification, the outer periphery of the flange is turned inward to provide a groove to receive the outer edge of a midsole.

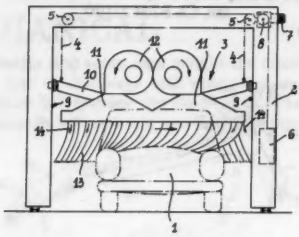
3,705,435

APPARATUS FOR WASHING VEHICLES

Ulrich Von Kulmer, Friedberg, Germany, assignor to Maschinenfabrik Kleindienst & Co., Augsburg, Germany

Filed Sept. 16, 1970, Ser. No. 72,719
Claims priority, application Germany, Dec. 15, 1969, P 19 62 818.3
Int. Cl. B60s *3/04*
U.S. Cl. 15—21 R **8 Claims**

A method of, and apparatus for, washing cars and other vehicles involves the use of relatively soft bristles which are pressed on to the vehicle surface by means of compressed air jets conducted along the bristles which also serve to dry the vehicle. The bristles which may be in groups are suitably



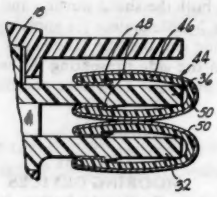
mounted on axes substantially at right angles to the surface of the vehicle.

3,705,436

FICHE CLEANING ELEMENT

Robert G. Holliday, Ann Arbor, Mich., assignor to Xerox Corporation, Ann Arbor, Mich.

Division of Ser. No. 13,276, Feb. 24, 1970, Pat. No. 3,633,761.
This application June 18, 1971, Ser. No. 154,403
Int. Cl. G11b *1/02*
U.S. Cl. 15—210 R **3 Claims**



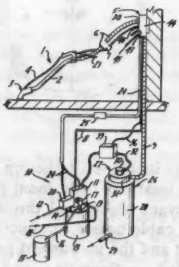
A file unit for storing microfiche which keeps the microfiche flat and clean. A vertical column of storage sections is provided which is four sided and which is on a turntable base to facilitate access to storage spaces opening to each of the sides. Replaceable cleaning elements are mounted at the top of the column to permit cleaning of the microfiche.

3,705,437

COMBINATION HIGH PRESSURE WASHER AND VACUUM

Louis Rukavina, Jr.; Robert L. Brower, both of Milwaukee, Wis., and Daniel J. Lane, Park Ridge, Ill., assignors to Cleaning Systems Industries, Inc., Milwaukee, Wis.

Filed Aug. 17, 1970, Ser. No. 64,314
Int. Cl. A47l *5/38*
U.S. Cl. 15—302 **5 Claims**



A cleaning device having a cleaning head for working over a surface to be cleaned. The head forms an elongated suction

channel which is connected to a vacuum system. A high pressure liquid line is connected to a nozzle which directs a patterned jet of liquid to the cleaning surface through the suction channel. A shield assembly separates the liquid jet from the suction channel and is adjustable to correspond to the desired liquid jet pattern. The vacuum line and liquid line are removably attached to an outlet which connects the liquid line to a pumping station where cleaning and rinsing liquid are selectively supplied to the line in response to electrical signals from a set of dead man switches on the cleaning device, while the vacuum system is controlled by an on-off switch at the outlet.

3,705,438

LOCABLE RUNNERS

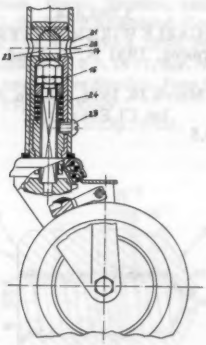
Herbert Stosberg; Horst Fleischmann, both of Wermelskirchen-Tente/Rhineland; Gunter Reinhards, Wermelskirchen/Rhineland, and Siegfried Engels, Wermelskirchen, all of Germany, assignors to Firm Tente-Rollen Gesellschaft mit beschrankter Haftung Companie, Wermelskirchen-Tente/Rhineland, Germany

Filed Nov. 9, 1970, Ser. No. 88,005

Claims priority, application Germany, April 29, 1970, G 7 016 058.6

Int. Cl. B60b *33/00*

U.S. Cl. 16—35 **10 Claims**



A runner has a conventional back-set bearing and bearing pivot. An axially movable pin passes through the pivot to operate retaining components in the runner fork to lock the wheel against running and/or swivelling movement. The pin is operated by a trip cam housed in a casing which surrounds the pivot and locking pin. The casing may be made in two half-shells and has a lower beading which engages in a groove of the bearing pivot. The casing forms an attachment plug whereby the runner can be fitted to a foot of an article of furniture.

3,705,439

CURTAIN SUSPENSION RAILS

Frank Cooksey, 90 Canning Road; Terence A. Dix, 27 Orchard Close, and David J. Hobson, c/o The Miners Welfare Club, Lichfield St., all of Tamworth, England

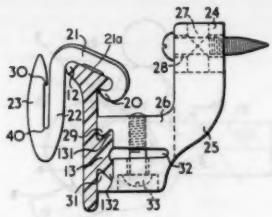
Filed Jan. 23, 1970, Ser. No. 5,191

Claims priority, application Great Britain, Feb. 20, 1969, 9,222/69; Feb. 20, 1969, 9,223/69; Sept. 1, 1969, 3,3054/69

Int. Cl. A47h *1/04, 15/00*

U.S. Cl. 16—94 D **9 Claims**

A curtain suspension arrangement comprises a rail, support means for said rail, a plurality of hook-gliders which are combined hooks for engagement with a curtain and gliders for engagement with a rail, said rail being relatively deep with a smooth front surface and comprising a glider-securing means along the upper edge portion thereof, each hook-glider comprising a rail-engagement portion adapted to be supported solely by and slide smoothly along said glider-securing means, the hook portion of each hook-glider lying above the lower



edge of the rail, whereby a curtain can be supported at a high level relative to the rail.

3,705,440

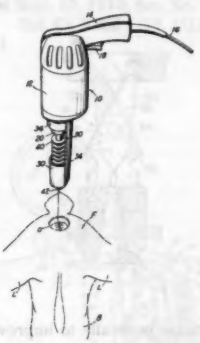
FOWL VENT REMOVAL APPARATUS AND METHOD

Ernest E. Lewis, Flowery Branch, Ga., assignor to Gainesville Machine Company, Inc., Gainesville, Ga.

Filed Jan. 21, 1971, Ser. No. 108,316

Int. Cl. A22c *21/06*

U.S. Cl. 17—11 **7 Claims**



A rotating means in the form of a power operated tool rotates an elongated spiral member relative to a tubular serrated cutting member. The spiral member has a sharp tapered outer end which extends beyond the cutting edge of the cutting member. The spiral member penetrates into the area of the fowl adjacent the vent thereof and produces a reaction force to urge such area of the fowl into engagement with the cutting member to make a circular cut in the tissue surrounding the vent so as to disconnect the vent from the surrounding tissue and thereby remove the vent of the fowl.

3,705,441

STRIPPER FOR THE DRAWING FRAMES OF SPINNING MACHINES

Adolf M. Muller, Waxensteinstr 67, and Josef Grosselfinger, Schillstr. 186, both of Augsburg, Germany

Filed May 25, 1970, Ser. No. 40,129

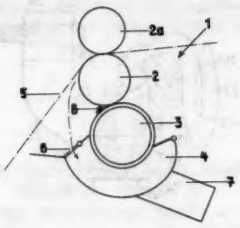
Claims priority, application Germany, May 23, 1969, P 19 26 419.8

Int. Cl. D01h *5/62*

U.S. Cl. 19—263 **6 Claims**

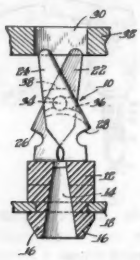
A leather-covered stripper roller, bearing upon one of two coacting transport rollers for the conveyance of filamentary

material to remove adhering lint or fluff with the aid of an associated suction device, comprises a tube rotatably journaled on a fixed shaft which carries an externally operable brake en-



gageable with the tube from within. The brake preferably includes an elastically expandable sleeve which is intermittently inflatable by compressed air to arrest the stripper roller against frictional entrainment by the engaged transport roller.

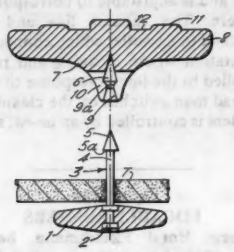
3,705,442
SNAP-IN FASTENER
Harry A. Sygnator, Arlington Heights, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.
Filed Oct. 6, 1971, Ser. No. 187,016
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 P **10 Claims**



This invention relates generally to improvements in spring type fasteners and more particularly to a one-piece fastener for attaching and detaching the back panel of a television set with respect to the chassis thereof. An embodiment of the invention disclosed herein comprises a pair of elongate, blade-like members resiliently coupled at one extremity to a snap-in head having a clamping surface for engaging one side of an apertured workpiece or panel. Said blade-like members are movable in scissors-like fashion and are provided with oppositely disposed shoulders for engaging the opposite side of said apertured workpiece. Said members may be temporarily retained in panel disengaged relation against the opposing force of said resilient coupling to facilitate attachment or detachment of a back panel with respect to a television chassis.

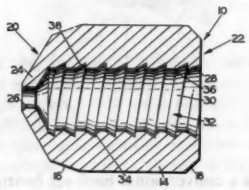
3,705,443
AUTOMATIC BUTTON FASTENING DEVICE
Marsilio Camporese, 28, via Gustavo Modena, and Alberto Levi, 4, via Londonio, both of Milan, Italy
Continuation-in-part of Ser. No. 732,271, Dec. 9, 1968, abandoned. This application Feb. 1, 1971, Ser. No. 111,690
Int. Cl. A44b *1/18*
U.S. Cl. 24—90 PR **6 Claims**

An automatic button fastening device comprised of a locking stud and a receptacle portion. The locking stud is adapted to be passed through the article to be fastened and then inserted into the receptacle portion which may be in the form of a button body. Involuntary removal from the receptacle portion is prevented by the retaining shoulders holding the locking stud in place. The locking stud can be released by the



lateral movement of the locking stud accompanied by the radial displacement of the receptacle portion which is accompanied by the lateral shifting of the retainer shoulder.

3,705,444
SWAGABLE WIRE ROPE FERRULE
Kenneth L. Wernsing, 1931 N. E. 72nd Avenue, Portland, Oreg.
Filed March 24, 1971, Ser. No. 127,652
Int. Cl. F16g *11/02*
U.S. Cl. 24—114.5 **4 Claims**

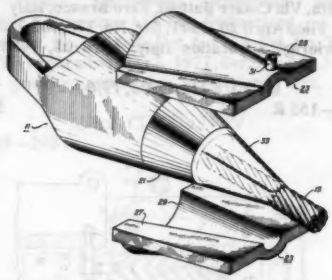


A ferrule for use on the end of a wire rope comprises a swageable metal body having a forward nose section and a rearward open terminal section interconnected by a longitudinally extending bore. The bore has a plurality of circumferentially formed ridges defined by leading and trailing surfaces meeting at an angle of not more than about 90°. When a wire rope is inserted into the bore and the ferrule swaged, the metal is displaced from the rope into the recesses present between the ridges. The leading surface of each ridge thereupon provides a buttress, backing up the metal displaced into the recesses, and opposing withdrawal of the rop when a pulling stress is applied to it.

3,705,445
VIBRATION DAMPED FITTING
Carl W. Smollinger, 1621 Marlin Ave., Williamsport, Pa.
Filed Dec. 31, 1969, Ser. No. 889,381
Int. Cl. F16g *11/00*
U.S. Cl. 24—123 **11 Claims**

A socket type end fitting for wire rope and strand is pro-

vided with a plastic cone intimately shaped about the strand



adjacent to the fitting to dampen vibrations in the rope.

ERRATUM

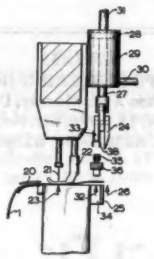
For Class 24—265 see:
Patent No. 3,705,456

3,705,446

APPARATUS FOR PROCESSING SLIDE FASTENERS

Pertti O. Gustavsson, Boras, Sweden, assignor to William Prym-Werke KG, Stolberg/Rheinland, Germany

Division of Ser. No. 734,262, June 4, 1968, Pat. No. 3,570,434.
This application March 3, 1971, Ser. No. 120,614
Claims priority, application Sweden, June 5, 1967, 7840/67; Germany, Sept. 6, 1967, P 42946
Int. Cl. B23p *23/00*
U.S. Cl. 29—34 A **14 Claims**



Apparatus for processing slide fasteners including a two needle sewing machine for sewing portions of a pair of continuous slide fastener stringers with engaged coupling elements to portions of a garment or the like, cutting means for cutting off the remainder of the continuous stringers from the sewn on portions thereof, and means to permanently connect the cut-off ends of the remainder of the stringers.

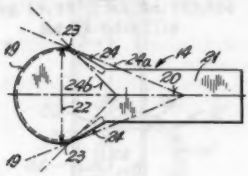
3,705,447

MACHINE TOOL BIT

John P. Kollar, Trumbull, Conn., assignor to Thomas J. Kollar, Milford, Conn.

Filed Oct. 22, 1970, Ser. No. 83,067
Int. Cl. B26d *1/00*
U.S. Cl. 29—95 **4 Claims**

There is disclosed a single end, full radius, contouring and disposable machine tool bit having on its cutting end cutting edges comprising a centralized semicircular segment which is larger in diameter than the width of the body of the bit for cutting work during its forward and lateral movements and means for cutting the work during the retrograde movements of the bit including an arcuate segment which is a continuation of said semicircular segment at each end of the latter for about 10° and a straight segment forming a continuation of each of



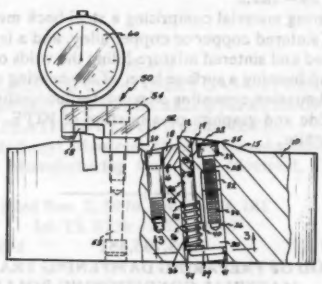
said arcuate segments extending toward and forming an included angle of about 60° with the longitudinal axis of the body of the bit.

3,705,448

BROACH ASSEMBLY

Kurt Bansen, 2142 Walter Court, Warren, Mich.

Filed Sept. 10, 1970, Ser. No. 70,983
Int. Cl. B26d *1/00*, *1/12*
U.S. Cl. 29—95.1 **4 Claims**



A broach assembly useful in shaving or skiving operations including a broach block, a cutting blade and means accessible from the cutting blade side of the broach block to mount the blade to the block and to adjust the position of the blade with respect to the block. The adjustment is provided by a pin engageable with the underside of the cutting blade and a screw actuated device accessible from adjacent the blade for moving the pin vertically beneath the blade.

3,705,449

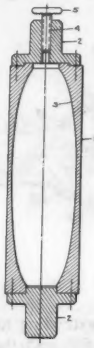
ROLLING AND SQUEEZING APPARATUS

Eduard Kuesters, Gladbacher Strasse 457, 415 Krefeld, Germany

Filed Sept. 25, 1970, Ser. No. 75,315
Claims priority, application Germany, Sept. 27, 1969, P 19 48 890.5
Int. Cl. B21b *31/32*
U.S. Cl. 29—113 AD **2 Claims**

An improved rolling and squeezing apparatus comprising a

rotating hollow roll shell having an inside surface the generatrix of which is symmetrical about its midpoint and is



non-linear in at least some portions, and pressure means acting on said inside surface.

3,705,450

BEARING MATERIAL

Nobukazu Morisaki, Aichi-ken, Japan, assignor to Daido Metal Company Ltd., Nagoya, Japan

Filed July 16, 1971, Ser. No. 163,250
Claims priority, application Japan, Oct. 27, 1970, 45/94498
Int. Cl. B22f *7/00*
U.S. Cl. 29—182.3 2 Claims

A bearing material comprising a steel back metal, a porous layer of sintered copper or copper alloy, and a layer of an impregnated and sintered mixture filling the voids of said porous layer and forming a surface layer of the bearing material, said sintered mixture consisting of polytetrafluoroethylene, lead or lead oxide and graphite or a mixture of PTFE, lead fluoride and graphite.

3,705,451

METHOD OF PREPARING DAMPENING TRANSFER AND MATERIAL CONDITIONING ROLLER

Harold P. Dahlgren, 6919 Blackwood, Dallas, Tex.

Continuation of Ser. No. 414,574, Nov. 30, 1964, abandoned, which is a continuation-in-part of Ser. No. 26,035, May 2, 1960, Pat. No. 3,168,037, which is a continuation-in-part of Ser. No. 844,372, Oct. 5, 1959, abandoned. This application Dec. 9, 1966, Ser. No. 600,650
Int. Cl. B21b *1/14;* B21k *1/02*
U.S. Cl. 29—148.4 D 2 Claims

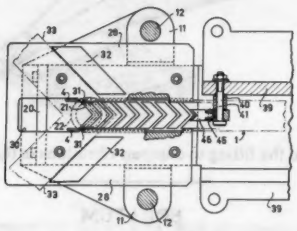
A fluid transfer and material conditioning roller, and method of preparing same, wherein a metallic roller is chrome plated, the surface of the chrome plating is ground and polished to provide a very smooth, uninterrupted surface thereon, the surface is treated with a solution of chrome solvent such as hydrochloric, or sulfuric acid mixed with equal parts of water and gum arabic to remove chromium oxide from the surface thereof and to coat said surface with an oxidation-preventing coating to render the roller permanently hydrophilic. The roller is particularly adaptable for use in a continuous duty dampening system such as that shown in Dahlgren U.S. Pat. No. 3,168,037, for transferring dampening fluid to a lithographic plate by depositing the fluid on a film of ink from which it is transferred to the plate. The roller has further applicability in transferring fluid to a moving web or other surface and for conditioning surfaces such as polishing and calendaring.

3,705,452

METHOD AND DEVICE FOR UNITING WOOD STRIPS TOGETHER

Alfredo Motta, Via Cesare Battisti, Zero Branco, Italy

Filed April 20, 1971, Ser. No. 135,602
Claims priority, application Italy, April 28, 1970, 24008 A/70
Int. Cl. B23p *17/00, 19/00*
U.S. Cl. 29—155 R 3 Claims



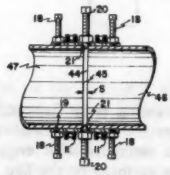
A method and a device are disclosed for joining wooden strips set at an angle, such as the wooden strips employed for picture frames and the like. The metal fasteners are chevron shaped metal sheet blanks whose respective ends are integral with two parallely running bands. The fasteners have teeth projecting perpendicularly to their common plane, said teeth being intended to be driven into the wood strips. A hydraulic punching press is provided which, once the wood strips set at the desired angle have been positioned on the press bench, drives a punch which severs each chevron-like fastener individually and drives the relevant teeth into the wood strips to be joined.

3,705,453

PIPE CENTERING JIG

Neil W. Olson, 417 Afton Ave., Murray, Utah

Filed Nov. 13, 1970, Ser. No. 89,226
Int. Cl. B23k *37/04;* B23p *19/00*
U.S. Cl. 29—200 P 10 Claims



A flexible elongate clamping device constructed for temporary securement about a pair of adjacent pipe sections which are to be welded or otherwise secured together. The device preferably takes the form of a pair of mutually-spaced, elongate, link-type chains having mutually spaced cross-plates secured thereto at corresponding links thereof. Such plates accommodate central bolts having tapered ends for aiding the selection of the desired spacing between the adjacent pipe sections prior to tack welding thereof. Likewise, the cross-plates accommodate other, side adjustment means for insuring the mutual co-axial alignment of the adjacent pipe sections, whether their outside diameters differ or whether the configuration of such adjacent pipe sections assumes a rectilinear or even a curved form.

3,705,454

APPARATUS FOR FRAMING A FOIL PORTION

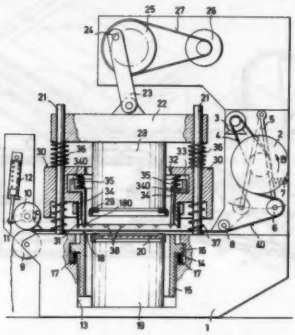
Gerhard Zuhlke, Geroldswil, Switzerland, assignor to Schweiger & Schweizer AG, Zug, Switzerland

Division of Ser. No. 864,048, Oct. 6, 1969, Pat. No. 3,623,211. This application May 7, 1971, Ser. No. 141,168

Claims priority, application Switzerland, Oct. 21, 1968, 15674/68

Int. Cl. B23p *19/04*

U.S. Cl. 29—208 D 9 Claims



In order to frame a foil portion with a mirror surface, a foil is perforated along a circular line, a marginal zone of the foil is frictionally held within the endless line, the foil is cut along the endless line, and the marginal zone is firmly clamped and moved over a first frame part and tensioned, whereupon a second frame part is pressed against the first frame part and clamps the tensioned foil to the first frame part without any wrinkles or folds.

3,705,455

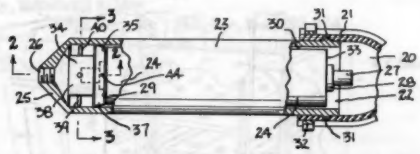
REPLACEABLE ROLLER SURFACE FOR CONVEYOR AND APPLICATION TECHNIQUES THEREFOR

John R. Lovett, 23604 Lake Road, Village, Ohio

Continuation-in-part of Ser. No. 43,349, June 4, 1970, abandoned. This application Jan. 28, 1971, Ser. No. 110,462

Int. Cl. B23p *19/04*

U.S. Cl. 29—234 11 Claims



A resilient tubular sleeve of elastomeric material provided with a plurality of longitudinally-extending circumferentially-spaced cavities inwardly thereof to provide a replaceable surface for a conveyor roller. The cavities provide an intermittent series of compressible wall sections on the sleeve for engagement with and displacement by a conveyor belt in response to axial rotation of the roller to provide a seal cleaning roller surface. The tubular sleeve has a smaller internal diameter, in its unstressed condition, than the diameter of the roller on which it is mounted. The tubular sleeve is mounted on the roller by expanding its internal diameter sufficiently to permit it to slide axially along the roller to the desired position and thereafter permitting it to contact upon the roller surface and resiliently grip it. Improved techniques, tools and devices for effecting the mounting of the tubular sleeve on the roller for disclosed, as well as the utilization of these techniques for deforming the sleeve to provide a self-aligning conveyor roller.

3,705,456

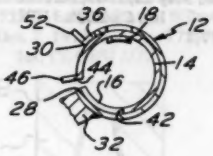
WATCHBAND COUPLING

Mates A. Bruner, 1113 Wynnbrook Place, Secane, Pa.

Continuation-in-part of Ser. No. 110,215, Jan. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 866,325, Oct. 14, 1969, Pat. No. 3,605,212. This application Aug. 19, 1971, Ser. No. 173,054

Int. Cl. A44c *5/18*

U.S. Cl. 24—265 B 19 Claims



A watchband coupling adapted to secure a watchband to a watch having spaced lugs with a pin secured therebetween. The watchband is readily removable from the watch by providing a pair of concentric partially cylindrical sections, with one section rotatable within the other. A slot is formed in each cylindrical section. The inner partially cylindrical section is secured within the outer partially cylindrical section by an inwardly extending lip which lies parallel to the outer cylindrical section, and over which the inner cylindrical section will rotate. In another aspect of the invention, a pair of resilient partially cylindrical sleeves is positioned in the outer cylindrical section. These resilient sleeves can be moved toward and away from each other in order to adjust the effective width of the watchband coupling. In this way, the coupling is adapted to be used with watches having different widths between the lugs.

3,705,457

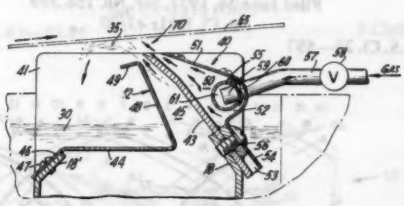
WAVE SOLDERING USING INERT GAS TO PROTECT PRETINNED AND SOLDERED SURFACES OF RELATIVELY FLAT WORKPIECES

Louis V. Tardoskegyi, Montreal, Quebec, Canada, assignor to Electrovert Manufacturing Co., Ltd., Montreal, Quebec, Canada

Filed Nov. 2, 1970, Ser. No. 86,181

Int. Cl. B23k *31/02, 35/38*

U.S. Cl. 29—494 11 Claims



Relatively flat workpieces, such as printed circuit boards, are pretinned and soldered using the wave solder technique in which molten solder is forced upwardly through a nozzle to form a standing wave of molten solder which is gently curved in a direction parallel to the work travel direction. A flat workpiece is moved in the work travel direction with its undersurface in contact with the standing wave and, as its forward end emerges from the wave, it defines, with the surface of the wave, a space. Inert gas under pressure is supplied to this space to exclude air from the solder coated undersurface of the workpiece to inhibit oxidation thereof. The disclosure apparatus includes a nozzle for forming a one-sided standing wave, and a second nozzle is positioned above and extends in the same direction as the solder wave-forming nozzle. The second nozzle is supplied with the inert gas under pressure to

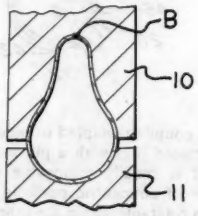
be discharged over the surface of the standing wave of solder, with the inert gas flowing over the undersurface of the workpiece and exiting at the side edges thereof.

3,705,458

METHOD FOR TESTING WELDED SEAM PIPES IN A TUBE MILL

Clyde W. Vassar, Vancouver, Wash., assignor to Nelson D. Abbey, Jr., Perrysburg, Ohio

Filed May 22, 1969, Ser. No. 826,865
Int. Cl. B23k 31/02
U.S. Cl. 29—477.7 1 Claim



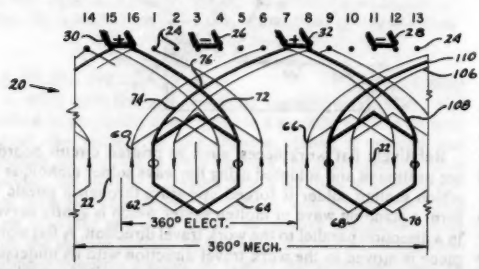
The testing of welded seam tubing in a tube mill which commences with an endless metallic strip or ribbon and ends with a welded seam tube cut to a predetermined length after passing through a series of roll passes to form the cylindrical tube, welding the free abutting edges, sizing and shaping the tube and finally recurrently cutting the continuous tube into the desired lengths. After the welding station the tubing is subjected to deformation pressures in order to detect imperfections in the welded seam as well as to the parent metal itself adjacent to the weld, thereby to improve the end product and militate against leaks. Thereafter, the tubing is sized and straightened to its desired shape. Imperfections disclosed by such deformations are determined as the tube travels by accepted methods, such as by ultrasonic testing devices, and thereafter such imperfect areas are either cut out, reworked or discarded as scrap.

3,705,459

WAVE WINDING OF ARMATURES

John M. Biddison, Dayton, Ohio, assignor to The Globe Tool and Engineering Company, Dayton, Ohio

Filed June 24, 1971, Ser. No. 156,359
Int. Cl. H01r 43/00
U.S. Cl. 29—597 3 Claims



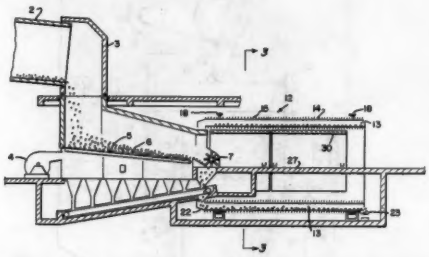
Procedures are described for wave winding armatures to be used in dynamoelectric machines having four or more poles utilizing flier type armature winding machines. After the winding of each coil or pair of coils, the armature is rotated through 360 electrical degrees plus or minus the angle between adjacent armature slots to position the armature for the winding of the next coil or pair of coils. Intermediate the winding of coils by the same flier the lead wire connections are made to the commutator by looping the lead wires about hooks projecting from the commutator. All coils are wound with the flier or fliers rotating in the same direction.

3,705,460

MATERIAL COOLING APPARATUS

Karl-Heinz Kayatz, Hamburg-Nienstedten, Germany, assignor to Claudius Peters Aktiengesellschaft

Filed Jan. 18, 1971, Ser. No. 107,216
Int. Cl. F26b 19/00
U.S. Cl. 34—60 3 Claims



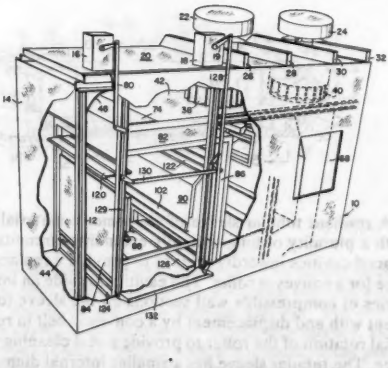
A cement clinker cooler for use with a kiln which includes a grate-type recuperation cooler wherein the cooling air is returned to the kiln for use as combustion air. The cooling apparatus also includes a second-stage cooler which may be in the form of an indirect heat exchanger or a radiation cooler or a combination of an indirect heat exchanger and a radiation cooler.

3,705,461

DRYER DAMPER AND CONTROL MECHANISM

Ralph C. Parkes, North Hancock St. & Lehigh Ave., Rydal, Pa.

Filed Sept. 24, 1970, Ser. No. 74,958
Int. Cl. F26b 21/06
U.S. Cl. 34—191 5 Claims



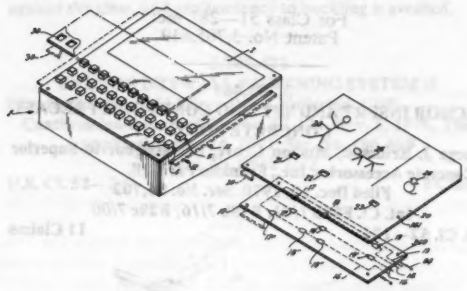
A dryer and damper control mechanism designed to dry articles by forced warm air including a plurality of internal baffles directing the flow of heated air through the dryer, a first set of dampers co-operating to guide the air downwardly through the articles being dried, a second pair of dampers to direct the heated air upwardly through the articles being dried and, controls to precisely regulate the temperature, humidity, and volume of the heated air through all portions of the apparatus.

3,705,462

TEACHING MACHINE

Matthew Mansfield, 418 West 20th Street, New York, N.Y., and Morton Cooperman, 55 West 92nd Street, New York, N.Y.

Filed Aug. 13, 1971, Ser. No. 171,548
Int. Cl. G09b 7/02
U.S. Cl. 35—9 D 15 Claims



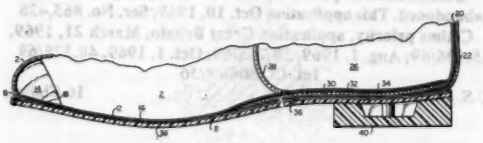
A teaching machine is provided with a plurality of inserts, the first insert illustrating a question or problem and allowing for the depression of only certain selector keys. A second insert, aligned with the first insert, is provided with a plurality of openings which are acted upon by the selector keys, the openings in the second insert being connected by particular circuitry to allow for recognition by the operator of the teaching machine that an individual segment of the problem has been correctly selected and that the entire problem or question has been successfully completed. The machine may be so constituted, based upon an operator's selection, that only completion of a final answer is recognized.

3,705,463

CONSTRUCTION FOR SHOE, SLIPPER OR THE LIKE

Milton Lown, Bangor, Maine, assignor to Northeast Shoe Company, Pittsfield, Maine

Filed Dec. 30, 1969, Ser. No. 889,074
Int. Cl. A43b 13/00, 23/00
U.S. Cl. 36—25 4 Claims



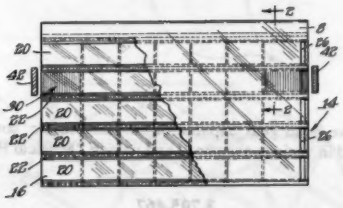
An improved shoe having a front upper provided with a pair of opposing side edges which are turned under, and flexible elastic bridging means joining the side edges to each other underneath the upper. A rear upper member is secured adjacent its forward edge to the rear portion of the front upper. A midsole member is secured to the front upper and to the rear upper member and has recess means for positioning therein cushion means of a relatively soft compressible material. A rigid toe insert member is secured to the front upper forwardly of the bridging means and a rigid heel insert member is secured to the front upper rearwardly of the bridging means and to the rear upper member. Outersole and heel members are secured to the midsole member, and the cushion means underlies the bridging means and is adhesively secured thereto.

3,705,464

MICROFILM HOLDER

Ernest A. Dahl, Jr., 729 Greenwood Ave., Wilmette, Ill.

Filed Oct. 2, 1970, Ser. No. 77,581
Int. Cl. G09f 1/12
U.S. Cl. 40—105.5 4 Claims



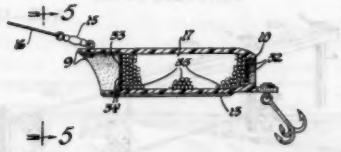
A transparent holder for a plurality of microfilm strips arranged in parallel pocketed array thereacross and including thin magnetic strip means carried by a pocket of the holder in a position adapting the assembly for use in a fanning magnetic type of filing system wherein a storage file tray or drawer includes magnet means along the sides thereof acting through the magnetic strip means to cause fanning out or separation of the upper margins of a prearranged group of holders by magnetic repulsion in order to facilitate visual survey of the fanned holders for selective holder removal from the storage file or insertion thereof at a predetermined, proper location.

3,705,465

FISH LURE

Andrew Charney, 20918 Botsford Drive, Farmington, Mich.

Filed Jan. 11, 1971, Ser. No. 105,503
Int. Cl. A01k 85/00
U.S. Cl. 43—42.06 9 Claims



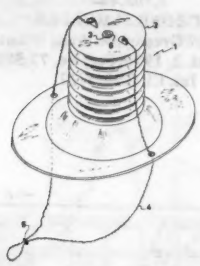
A fish lure having an elongated hollow body of light refracting plastic material with smoothly curved sidewalls which terminate at one or both ends with an oblique face to provide a circle of emitted light. The surfaces of the body are also provided along the bottom thereof with a pair of ribs extending substantially the full length of the body with relatively narrow outwardly facing, light emitting surfaces disposed obliquely to the adjacent wall surfaces. Interiorly of the body is a rollable "knocker" ball, a spinner or a quantity of salmon eggs.

3,705,466

MUSICAL HEAD GEARS

Ramy M. Sela, No. 4 Eleazar Hachorany Street, Tel Aviv, Israel

Filed Dec. 31, 1969, Ser. No. 889,652
Claims priority, application Israel, Jan. 27, 1969, 31495
Int. Cl. A63h 33/00
U.S. Cl. 46—1 F 1 Claim



A festive head gear capable of emitting comic, sounds, or tunes used in various occasions and named "Musical Hat".

3,705,467

SOIL BED PREPARATION, SOIL STABILIZING, SOIL CONDITIONING, AND SOIL IMPROVING PROCESS

James T. McKnight, 8 Fawn Lane, Martinsville, N.J.

Filed May 27, 1971, Ser. No. 147,642
Int. Cl. A01n 7/02
U.S. Cl. 47—9 14 Claims

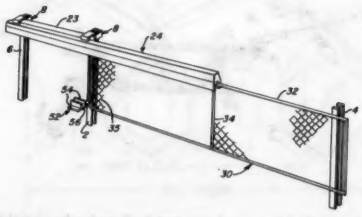
A method of seed bed preparation, and soil improvement, conditioning, and stabilization comprising coating soil particles with a reactive high molecular weight cationic polymer or latex so as to form coated, positively charged soil particles and reacting coated, charged soil particles with an anionic alkali-treated lignin binder to provide a film or a network on the soil of sufficient wet strength to provide the soil with resistance to rainfall and water runoff. In addition to effectively stabilizing the soil, the soil treatment method accelerates the rate of seed germination and decreases the loss of valuable fertilizer material and seed.

3,705,468

CANTILEVER SLIDE GATE

James E. Ashworth, Moraga, Calif., assignor to United States Steel Corporation

Filed May 13, 1971, Ser. No. 143,076
Int. Cl. E05d 13/02
U.S. Cl. 49—409 10 Claims



A cantilever slide gate is supported on a gate post and on a line post spaced from the fence post on the side opposite the gate opening by means of a pair of brackets, one secured to each post. Each bracket supports a pair of fixed rollers with their axes horizontal in a transverse vertical plane normal to a longitudinal vertical plane through the post. A longitudinally movable track is supported on the rollers by means of two spaced apart top flanges. The track also has two spaced apart bottom flanges which support the gate by means of two pairs of spaced apart rollers secured to the top of the gate with their axes parallel to the axes of the fixed rollers, these rollers resting on the bottom flanges. One pair of the gate rollers is positioned generally centrally of the gate and the other pair is positioned on the side toward the line post. Means are provided to cause the track and gate to move in unison with the gate movement being twice that of the track movement.

ERRATUM

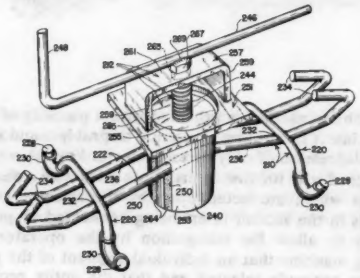
For Class 51—287 see:
Patent No. 3,705,619

3,705,469

ANCHOR INSERT AND SETTING CONE FOR A PRECAST CONCRETE BODY

George J. Eriksson, Morton Grove, Ill., assignor to Superior Concrete Accessories, Inc., Franklin Park, Ill.

Filed Dec. 10, 1970, Ser. No. 96,702
Int. Cl. F04b 1/41; B28b 7/16; B29c 7/00
U.S. Cl. 52—125 11 Claims



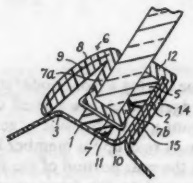
An anchor insert and a cooperating setting cone, the insert being designed for embedment in a concrete slab or other body, and the cone constituting a hole-forming pattern member which, when extracted from the hardened concrete, exposes a limited portion of the insert and renders it accessible for slab-lifting purposes. Novel cone-extracting means in the form of a torque rod facilitates breaking of the bond between the cone and the concrete and lifting the cone from the hole which it establishes in the concrete.

3,705,470

GLAZING WINDOWS OR WINDSCREEN OPENINGS, PARTICULARLY IN VEHICLE BODIES

Cecil Kent, Woking, England, assignor to Creators Limited, Woking, England

Continuation-in-part of Ser. No. 827,633, May 26, 1969, abandoned. This application Oct. 10, 1969, Ser. No. 865,428
Claims priority, application Great Britain, March 21, 1969, 15,106/69; Aug. 1, 1969, 38,765/69; Oct. 1, 1969, 48,325/69
Int. Cl. E06b 3/56
U.S. Cl. 52—208 16 Claims



The invention relates to glazing window or windscreen openings, particularly in vehicle bodies by securing the glass,

with a trim strip surrounding its edge, in the rebate of the opening by means of an adhesive pressed between the glass and/or the trim strip and the rebate. The trim strip is made of flexible plastics material with a channel portion which embraces the edge of the glass, and a front decorative strip portion which extends from and can hinge relative to the edge of the front wall of the channel portion which lies on the inside of the trim strip when it is fitted around the glass. The outer edge of the front portion bears against the front of the rebate. By this construction the inside edge of the trim strip is urged close against the glass, and any tendency to buckling is avoided.

3,705,471

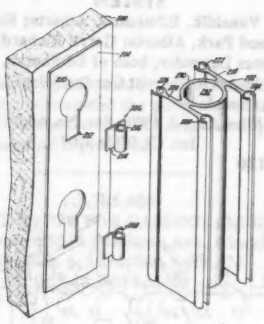
SNAP ON DRYWALL FASTENING SYSTEM II

Charles R. Allen, 551 Elinor Drive, Fullerton, Calif.

Continuation-in-part of Ser. No. 87,124, Nov. 5, 1970. This application Jan. 14, 1971, Ser. No. 106,469

Int. Cl. E04b *2/32*

U.S. Cl. 52—243 **9 Claims**



A building wall or other partition and a system for making such partitions in which individual wallboards or panel members can be removed and rearranged by being simply snapped into place and removed from studs is disclosed. The wallboards are held in position by resilient fastener clips received in grooves formed on supporting beams or studs.

3,705,472

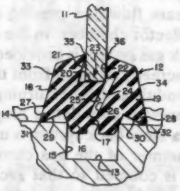
ELASTOMERIC GLAZING STRIP AND GLAZED FRAME INCORPORATING SUCH STRIP

Harry P. Van Oss, 150-17 12th Road, Whitestone, N.Y.

Filed Jan. 5, 1971, Ser. No. 104,080

Int. Cl. E04f *1/36*; E06b *7/14*

U.S. Cl. 52—400 **1 Claim**



A novel elastomeric glazing element of extruded form, utilized in the mounting of glass panes and other panels in channeled frame structures. The cross-sectional configuration of the element is such as to provide a pair of hingedly connected clamping and sealing arms, the upper portions of which engage edge margins of the panel to be mounted. One of the sealing arms is provided with an integral panel edge supporting abutment, which provides the entire edge support for the panel. Frame engaging abutments extending outwardly from each of the sealing arms at intermediate points and serve to support the elastomeric element in the frame. When the panel is seated in the elastomeric element and urged into the channel provided therefore in the frame structure, the action of the frame engaging abutments, seating against the frame, serves to close the respective sealing arms tightly on the opposed surfaces of the panel to achieve highly effective clamping and sealing thereof.

3,705,473

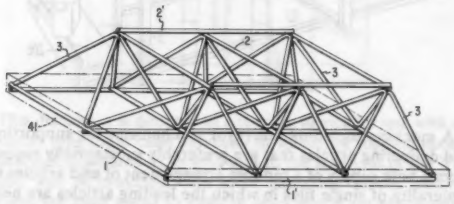
STRUCTURAL SLAB MEMBERS

Manuel Yeffal-Rueda, Mexico City, Mexico, assignor to Tridilosa International, Inc., Mexico D.F, Mexico

Filed July 20, 1970, Ser. No. 56,260

Int. Cl. E04c *3/09*

U.S. Cl. 52—650 **2 Claims**



A structural slab element composed of two grid frames and a series of diagonal members extending between the two frames, with each diagonal member end being connected to an intersection point of a respective grid frame, wherein certain of the diagonal members and/or portions of the grid frames are removed to provide rectangular passages for conduits and the regions around the removed portions are strengthened by reinforcing members. Certain of the diagonal members are prolonged to extend out of the resulting slab perpendicular to the grid frames for reinforcing walls built on the slab. A basic slab of the type described has one side, corresponding to the location of a grid frame, embedded in a slab of concrete to provide a reusable, large-area, light weight construction mold form.

3,705,474

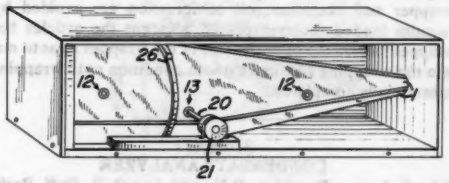
METHOD TO PREVENT TOXIC GAS EMISSION

Donald E. Smith, Towson, Md., assignor to The United States of America as represented by the Secretary of the Army

Division of Ser. No. 796,367, Feb. 4, 1969, Pat. No. 3,593,767. This application Jan. 21, 1971, Ser. No. 108,541

Int. Cl. B65b *31/04*

U.S. Cl. 53—22 A **2 Claims**

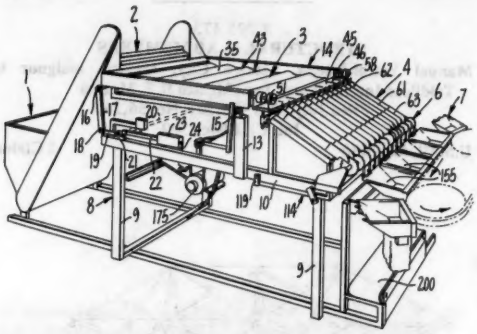


A method of containing, shipping, storing, and handling objects to prevent water vapor from entering the container atmosphere and to avoid toxic gas emission from the container atmosphere to the outside environment.

3,705,475
PACKAGING MACHINE AND METHOD

Lloyd D. Riley, Danville, Calif., assignor to Filper Corporation, San Ramon, Calif.

Continuation-in-part of Ser. No. 37,131, May 14, 1970, Pat. No. 3,650,083. This application Aug. 24, 1970, Ser. No. 66,218
Int. Cl. B65b 5/10
U.S. Cl. 53—35 26 Claims

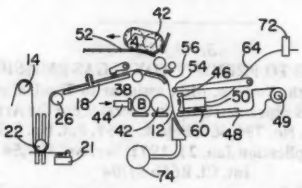


A machine including conveyor mechanisms for supporting and delivering articles that are preferably substantially round, from a bulk supply of a random arrangement of said articles to a plurality of single files in which the leading articles are held in alignment in a series thereof for discharge, in succession, into a container moving past the articles so aligned, and a release mechanism on said machine actuatable by each container-support for releasing one of said articles into each container as each container and its support moves past one of said series of articles.

3,705,476
WRAPPING APPARATUS

Ernest Robert Wolf, Aiken, S.C., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 12, 1971, Ser. No. 105,909
Int. Cl. B65b 11/38, 25/16
U.S. Cl. 53—210 3 Claims



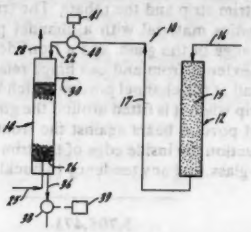
Improved wrapping apparatus for items such as one or more toilet tissue or toweling rolls especially wherein a film of thermoplastic material is used as the wrapper. Wrinkling of the wrapper and excessive roll compression are avoided by a vacuum loaded receiver placed adjacent the articles being wrapped but on the opposite side of the wrapper so as to maintain the wrapping film in a smooth condition until wrapping is substantially completed.

3,705,477
CONDENSATE ANALYZER

John F. Longo, Brooklyn, N.Y., and Joseph H. Duff, Basking Ridge, N.J., assignors to Ecodyne Corporation

Filed Feb. 8, 1971, Ser. No. 113,523
Int. Cl. B01d
U.S. Cl. 55—18 6 Claims

A method and apparatus for stripping carbon dioxide from a liquid for use in measuring true acid conductivity of boiler feed condensate. The condensate is passed through a standard Larson-Lane column connected in series with a column,

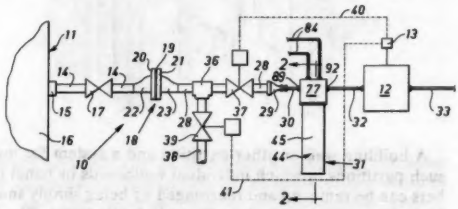


packed with an inert packing material. An inert gas is bubbled through the packed column to displace the carbon dioxide by mechanical action.

3,705,478
ELECTROSTATIC PRECIPITATOR AND GAS SAMPLING SYSTEM

Jan Frederik Vaneldik, Edmonton, Alberta; Ronald Ian Wilson, Sherwood Park, Alberta; Gerrit Richard Kampjes, and William James Lavender, both of Edmonton, Alberta, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Filed Aug. 4, 1970, Ser. No. 60,785
Int. Cl. B03c 3/01
U.S. Cl. 55—120 1 Claim



An electrostatic precipitator especially suited for use in a gas sampling system for removing solid particulate material from a sample gas stream withdrawn from an ore reduction roaster for passage to a gas chromatography unit is designed to remove residual and very small particulate material from such a gas stream after such a stream has first passed through a relatively coarse screen filter. The electrostatic precipitator includes a housing divided by a downwardly extending partition into an ionization chamber containing an ionizing wire electrode and a collector chamber containing a plate-type collector electrode. The partition terminates upwardly of the floor of the housing to provide a dust-collection chamber through which the gas stream flows on passing from the ionization chamber to the collector chamber. In the overall gas sampling system, a blow-back gas system is provided for dislodging solid material from the screen filter and from the upstream portion of the sampling conduit and for returning dislodged material to the roaster to prevent cumulative plugging of the system. Operation of such a blow-back system is usefully controlled by a sampling programmer of the gas chromatography unit to which the system is coupled so that such blow-back system operates automatically between successive analyses.

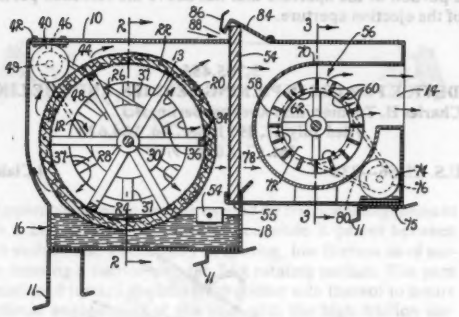
3,705,479
APPARATUS FOR COOLING AIR

Wilson W. McPherson, 925 E. Griffith, Fresno, Calif.

Filed May 15, 1969, Ser. No. 824,778
Int. Cl. B01d 47/00
U.S. Cl. 55—223 1 Claim

An apparatus for providing a stream of substantially dry evaporatively cooled air for use in dwellings and the like,

characterized by the utilization of a high-speed blower for establishing a stream of air, a continuously rotating water-saturated pad interposed in the stream adapted to provide a radial discharge of moisture-ladened, evaporatively cooled air



and a substantially dry perforated pad interposed in the stream of air between the blower and the periphery of the saturated pad for extracting moisture from the air, whereby a stream of relatively dry cooled air is provided.

3,705,480

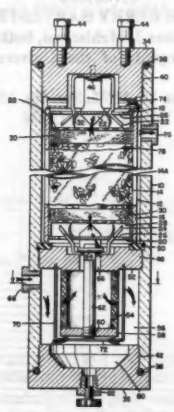
DEHYDRATOR FOR GASEOUS FLUIDS

Wallace M. Wireman, 3514 Handman Ave., Cincinnati, Ohio

Filed Feb. 6, 1970, Ser. No. 9,334

Int. Cl. B01d *50/00*

U.S. Cl. 55—275 **10 Claims**



The dehydrator for gaseous fluids incorporates in its desiccant bed a quantity of color change dew point indicating material. Said indicating material may be distributed at random throughout the desiccant bed, or it may be incorporated as one or more layers or strata. When distributed at random, the color change dew point indicating material furnishes a progressively continuous indication of the moisture content of the desiccant bed, by means of a gradually advancing color line moving toward a terminal indication at which the condition of the desiccant is regarded as spent, or saturated with moisture. The color line is visible through transparent portions of the dehydrator.

3,705,481

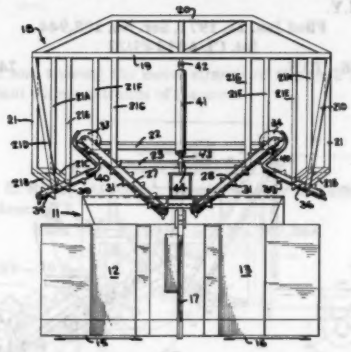
SUGAR CANE TOPPER FOR V-CUTTER HARVESTER

Harold A. Willett, Thibodaux, La., assignor to Cane Machinery & Engineering Company, Inc., Thibodaux, La.

Filed Dec. 28, 1970, Ser. No. 101,919

Int. Cl. A01d *45/10*

U.S. Cl. 56—13.9 **6 Claims**



This disclosure is directed to a topping device for use with a V-cutter type sugar cane harvester in which the topping main frame unit is pivoted at its lead end to the lead end of the V-cutter and is provided with cane gathering means which present the cane stalks to topping discs which are effectively raised and lowered by a cylinder and ram mechanism connected between the topping main frame and the frame of the V-cutter harvester at a point rearwardly of the pivotal connection between the topping frame and harvester.

3,705,482

FIELD HARVESTER FOR ROW CROPS

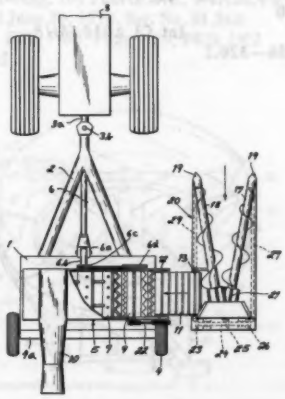
Josef Purrer, Gottmadingen, Germany, assignor to Maschinenfabrik Fahr AG, Gottmadingen, Germany

Filed Feb. 10, 1971, Ser. No. 114,329

Claims priority, application Germany, Feb. 12, 1970, P 20 06 232.2

Int. Cl. A01d *45/02*

U.S. Cl. 56—13.9 **11 Claims**



A field harvester for row crops, especially stalk crops such as corn, has a stalk-entrainment device formed by a pair of rearwardly converging augers or conveying worms which, at the rear of the entrainment device, are in superposed relationship to deposit stalks upon a conveyer with the butt end of the stalk forwardly. The stalks then move transversely beneath a

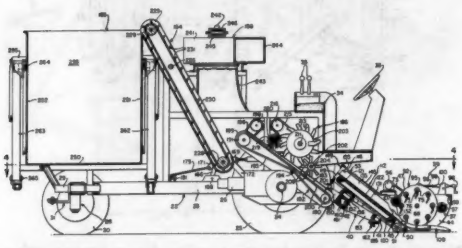
feed drum to the chopper and blower blades. The cutter consists of a plurality of blades arranged on a disk rotated at the base of the throat of the stalk-guide device.

3,705,483

MULTI-ROW, MULTI-CROP HARVESTER

Virgil N. Jarrell, Viola, Del., and Arthur L. Towson, Lewiston, N.Y., assignors to Chisholm-Ryder Company, Inc., Niagara Falls, N.Y.

Filed Jan. 22, 1971, Ser. No. 108,944
Int. Cl. A01d *45/22*
U.S. Cl. 56—13.5 **24 Claims**



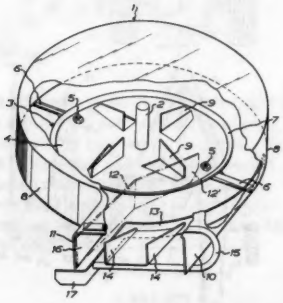
A machine for harvesting crop from densely planted crop-bearing plants of relatively low height arranged in closely spaced rows and suitable for harvesting different types of crops such as snap beans, lima beans, peas, dry beans and the like. The harvester is preferably self-propelled and driven over the bed of plants to harvest in a single pass a swath of the plants including a multiplicity of rows by stripping the foliage and crop from the plants but leaving the stems still rooted in the ground and then separating the stripped foliage from the crop, returning it to the swath harvested and collecting the separated crop.

3,705,484

LAWN-MOWERS WITH HORIZONTALLY ROTATING KNIVES

Stig Gunnar Hjelmquist, Box 6, S-57301 Tranas, 1, Sweden

Filed Oct. 19, 1971, Ser. No. 190,673
Claims priority, application Sweden, Oct. 21, 1970, 14160/70
Int. Cl. A01d *55/18*
U.S. Cl. 56—320.2 **3 Claims**



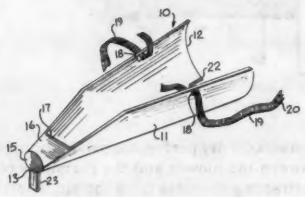
A lawn-mower with horizontally rotating knives has an ejection aperture formed in a casing enclosing the rotary knives. Screening means are arranged in the ejection aperture to prevent accidents. The knives of the lawn-mower function in the manner of fan blades so as to cause the uncut grass to stand on end and to lift the cut-off grass blades to a level above the path of the knives. The knife unit also includes another fan device which produces a flow of air directed towards the ejection aperture and carrying the cut-off grass outwards through this aperture. Further, screening means are disposed above the ejection aperture at a level with the path of motion of the knives, and the ejection of the grass has to take place through a portion of the aperture that lies above the screened portion of the ejection aperture.

3,705,485

DEVICE FOR USE IN PICKING BERRIES, AND THE LIKE

Charles H. Toomer, Elm Avenue, Berlin, N.J.

Filed July 21, 1971, Ser. No. 164,620
Int. Cl. A01g *19/00*
U.S. Cl. 56—330 **4 Claims**



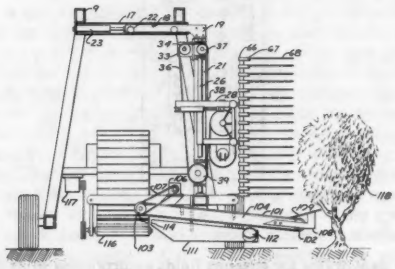
A portable trough for collecting berries, and the like, having one end closed for location against a user with the other end extending away from the user, suspension means extending from the trough for engagement about the user, and a receiver on the other trough end for receiving engagement with a plant being picked.

3,705,486

BUSH BERRY HARVESTER

Pictiaw Chen, and James J. Mehlschau, both of Yolo, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed June 15, 1971, Ser. No. 153,250
Int. Cl. A01g *19/04*
U.S. Cl. 56—330 **7 Claims**



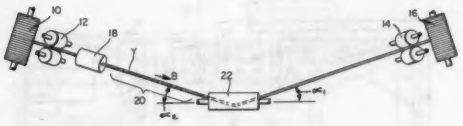
A bush berry harvester for berries growing on bushes in a row has a carriage movable along the row and carrying a pair of tine grids movable in unison up and down to a selected elevation and movable in unison transversely toward and away from the bushes and also oscillatable in opposite phase in a fore and aft direction at variable amplitude and frequency to dislodge berries onto a conveyor leading to a berry cooler on the carriage.

3,705,487

FALSE-TWISTING APPARATUS

George A. Carruthers, Haverbreaks, England, assignor to Turbo Machine Company, Lansdale, Pa.

Filed June 10, 1970, Ser. No. 45,111
Int. Cl. D02g 1/08
U.S. Cl. 57—77.4 20 Claims



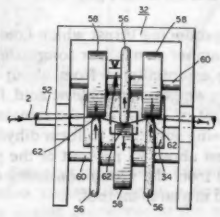
Apparatus wherein yarn is twisted by frictional engagement with a high friction rotating surface while it passes between such surface and a stationary or moving, low friction anvil surface forming a barrier with the first rotating surface. The yarn is tensioned toward the barrier on either side thereof to insure frictional engagement of the yarn with the high friction surface, while the high friction member is rotated in a direction such as to move the yarn away from the barrier. Water or some other lubricant may be used to minimize wear on the barrier forming surfaces. Further, the relative position of the first rotating surface and the mating anvil which may be counter or co-rotating with the high friction surface may be changed continuously or intermittently to minimize localized wear of these surfaces.

3,705,488

APPARATUS AND METHOD FOR PRODUCING A HIGH DEGREE OF TWIST IN YARN

William C. Sholly, Jr., Souderton, Pa., and George A. Carruthers, Lancaster, England, assignors to Turbo Machine Company, Lansdale, Pa.

Filed May 20, 1971, Ser. No. 145,326
Int. Cl. D02g 1/04; D01h 7/92
U.S. Cl. 57—77.4 11 Claims



Yarn texture is imparted with a high degree of twist, and at a high speed, to a continuous multifilament yarn; a low friction anvil member is spaced closely from a mating movable friction member. They thus form a barrier through which the yarn to be twisted cannot pass. The yarn is urged toward the barrier and toward the moving friction surface. High twist levels are attained by not only contacting the yarn with the moving friction surface but by wrapping it partially around such surface.

3,705,489

WIRE ROPE WITH PERMANENTLY LUBRICATED CORE

Carl W. Smollinger, Williamsport, Pa., assignor to Bethlehem Steel Corporation

Filed Dec. 24, 1970, Ser. No. 101,235
Int. Cl. D07b 1/06, 1/16
U.S. Cl. 57—149 9 Claims

A wire rope having an independent wire rope core or wire strand core has a heavy lubrication permanently encapsulated within the core by a thick plastic sheath or jacket surrounding the core and spacing the outer strands of the rope from the component wires or strands of the core.

3,705,490

EXPANSIBLE BRACELET

Richard E. Ripley, Attleboro, Mass., assignor to Textron Inc., Providence, R.I.

Filed May 28, 1971, Ser. No. 147,868
Int. Cl. F16g 13/24
U.S. Cl. 59—79 R 7 Claims

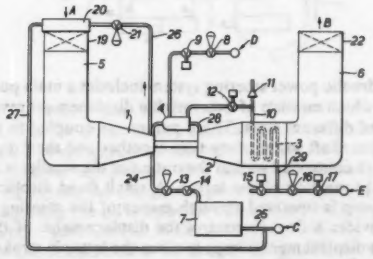
An expansible bracelet having two rows of overlapping staggered links, each link extending in a direction generally transverse to the length of the bracelet when viewed from the top including means for adjusting the length of the bracelet to fit the wrist of the wearer at the point of sale by either expanding or contracting the required number of links in a small section of the bracelet and retaining them in their expanded or contracted positions by an ornamental member which conceals them from view when the bracelet is being worn. The remaining unexpanded links of the bracelet permit the bracelet to be expanded when attached to a watch and slipped over the wearer's hand to his wrist.

3,705,491

JET ENGINE AIR COMPRESSOR

Richard W. Foster-Pegg, 101 Fourth Ave., Warren, Pa.

Filed June 30, 1970, Ser. No. 51,168
Int. Cl. F02c 7/00; F02g 1/00; F02k 1/02
U.S. Cl. 60—39.55 1 Claim



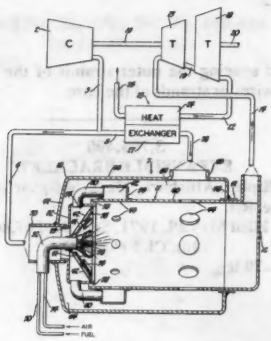
A gas turbine jet engine is modified to act as an air compressor by removing the propulsion nozzle to increase the expansion ratio across the driving turbine and by injecting steam generated in the jet exhaust into the driving turbine to restore volume flow lost by removal of compressed air from the compressor.

3,705,492

REGENERATIVE GAS TURBINE SYSTEM

Paul T. Vickers, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 11, 1971, Ser. No. 105,469
Int. Cl. F02c 7/10
U.S. Cl. 60—39.51 R 3 Claims



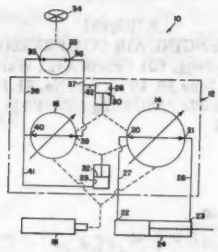
A regenerative gas turbine engine with combustion apparatus including a combustion liner has the compressor connected to the combustion apparatus so as to supply primarily air unheated by the regenerator to the combustion zone of the liner and primarily air heated by the regenerator to the dilution zone of the liner, to reduce generation of oxides of nitrogen. The heated air also is used as film cooling air flowing along the inner surface of the combustion liner wall.

3,705,493

PUMP ASSEMBLY FOR POWER STEERING SYSTEM

Roger John Nelson, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed July 26, 1971, Ser. No. 166,202
Int. Cl. F15b 15/18
U.S. Cl. 60—52.3 8 Claims



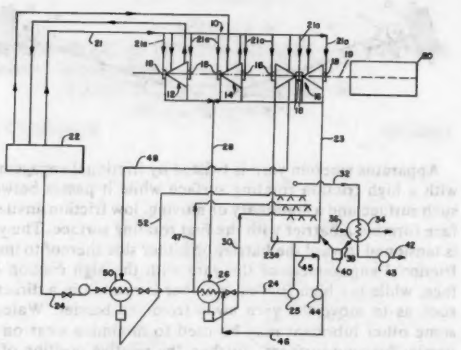
A hydraulic power steering system includes a main pump assembly which consists of two variable displacement reversible pumps of different sizes. These pumps are coupled to a common drive shaft so that they turn together and their displacements are controlled so that the output of the smaller is always a fixed proportion of the larger. A small fixed displacement hand pump is operated through means of the steering wheel and provides a flow to control the displacements of the two variable displacement pumps to place the latter in stroke. Output flow from the larger pump is connected to and provides the operating fluid for the steering motor. Output flow from the smaller pump is fed back to counteract the effects of the hand pump and return the two variable displacement pumps to their zero displacement positions once the turning of the steering wheel ceases. The amount of fluid pumped to the steering motor is thus proportional to the amount of fluid delivered by the hand pump.

3,705,494

HOLDING SYSTEM FOR STEAM POWER CYCLE

William J. Bow, Morris Township, Morris County, and Richard J. Pollard, Kendall Park, both of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed Jan. 4, 1971, Ser. No. 103,453
Int. Cl. F01n 7/00; F01k 13/02
U.S. Cl. 60—105 12 Claims



A system and method for maintaining a power plant at stand-by or holding status for indefinite or extended periods of time wherein a relatively small portion of steam is circulated through the power plant to maintain the low pressure portion of the power plant at an elevated temperature above, and a pressure below, atmospheric conditions. The addition of steam also heats, seals, and purges the low pressure portion of the plant of non-condensible vapors.

3,705,495

FUEL SYSTEMS AND OXIDIZERS

Leonard Greiner, Richmond, Va., and Welby G. Courtney, Dover, N.J., assignors to Texaco Experiment Incorporated, Richmond, Va.

Filed Jan. 21, 1963, Ser. No. 253,523
Int. Cl. C06d 5/08, 5/10
U.S. Cl. 60—214 13 Claims

7. A method of producing thrust which comprises reacting in a combustion chamber an oxidizer comprising a liquid composition consisting essentially of from about 59 percent to about 77 percent by weight of perchloric acid, from 0 to about 15 percent by weight of HNO_3 and the remainder water, the amount of water being sufficient to form dihydrated perchloric acid with at least about 95 percent of the perchloric acid and a fuel selected from the group consisting of light metals, metal hydrides, and mixtures thereof.

3,705,496

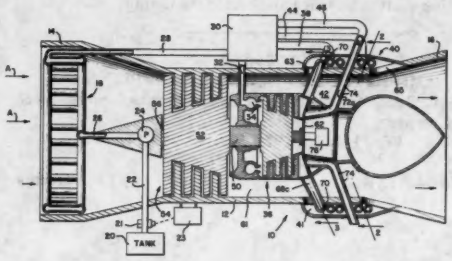
REACTION PROPULSION ENGINE AND METHOD OF OPERATION

Robert L. Wolf, Chesterfield County, Va., and Rodney McGann, Northridge, Calif., assignors to Texaco Experiment Incorporated, Richmond, Va.

Filed Nov. 20, 1963, Ser. No. 324,957
Int. Cl. F02k 11/00
U.S. Cl. 60—267 4 Claims

1. A reaction propulsion system including means providing a combustion chamber having at its rearward end an impulse expansion outlet nozzle, means providing a ram air intake, means directing air from the ram air intake to the forward end of the combustion chamber, a fuel storage chamber, indirect heat exchange means in heat exchange contact with the ram air in said air directing means, means directing fuel from said storage chamber through said heat exchange means, an air compressor providing a portion of the air directing means

between the heat exchange means and the combustion chamber, a direct expansion turbine for driving said compressor, a regenerative heat exchanger positioned in an auxiliary combustion chamber, means for selectively directing at least a portion of the fuel passing through said heat exchange means to said regenerative heat exchanger, means directing at least a



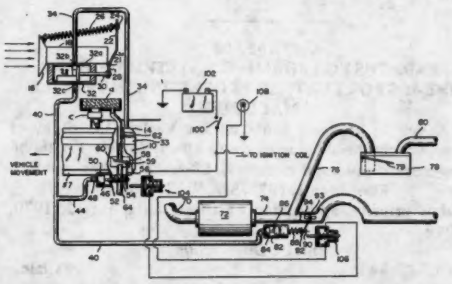
portion of the fuel from said heat exchange means and the fuel passing through the regenerative heat exchanger through the direct expansion turbine, and means for selectively combusting the fuel exhausting from the direct expansion turbine in the combustion chamber and in the auxiliary combustion chamber housing the regenerative heat exchanger.

3,705,497

VEHICLE ENGINE EMISSIONS CONTROL SYSTEM

Jesse R. Hollins, 1 Chester Drive, Great Neck, N.Y.

Filed May 10, 1971, Ser. No. 141,546
Int. Cl. F02b *75/10*
U.S. Cl. 60—283 **14 Claims**



A system for directing the exhaust emissions of a vehicle internal combustion engine through a treatment means and fumes from the engine crankcase to the air intake system of the engine when the vehicle is moving below a predetermined speed, and for directing the above mentioned exhaust emissions and crankcase fumes to the atmosphere when the vehicle is moving at or above said predetermined speed.

3,705,498

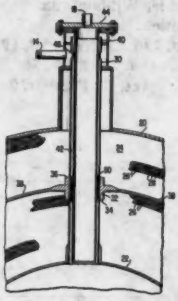
METHOD AND APPARATUS FOR COOLING A CRYOGENIC STORAGE CONTAINER

James R. DeHaan, Boulder, Colo., assignor to Cryogenic Engineering Company, Denver, Colo.

Filed Nov. 3, 1969, Ser. No. 873,313
Int. Cl. F17c *13/00*
U.S. Cl. 62—54 **32 Claims**

A method of conserving the refrigeration value of a dewar by increasing the thermal conductivity of a selected portion of an otherwise low thermal conductivity conduit and restricting the effective cross sectional area along at least as much as the conduit as the higher conductivity portion so as to increase the velocity of the boil-off gases and permit more of the refrigeration value of the boil-off gas to pass through the conduit's high conductivity portion from which the refrigeration is directed into the dewar's vacuum space.

A preferred structure for performing the above method includes a high thermal conductivity collar about the conduit and a high conductivity shield extending from the collar into and through the dewar's vacuum space. A second tube is placed within the conduit to form an annular space



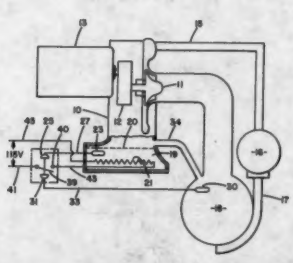
therebetween. One end of the second tube is closed so that the boil-off gases are forced through the annular space which is filled with a fine fibrous relatively non-conductive packing material in an area that extends for a distance at least as long as the collar. In this manner, the boil-off gas velocity is increased as it passes through the packing material and results in an increase in the transfer of the boil-off gas' refrigeration value to the collar, shield, and vacuum space.

3,705,499

OIL DILUTION CONTROL

Gordon L. Mount, West Monroe, and James W. Endress, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 23, 1971, Ser. No. 183,127
Int. Cl. F25b *43/02*
U.S. Cl. 62—84 **9 Claims**



The invention has to do with a method and control mechanism for continuously maintaining a satisfactory constant level of refrigerant concentration in the lubricating oil of a refrigeration compressor. The method consists of continuously measuring the refrigerant pressure and the oil temperature, adjusting the oil temperature in relation to the measured refrigerant pressure to maintain a substantially constant refrigerant concentration in the oil. A specific form of apparatus, particularly suitable for the practice of the method, may consist of a thermal responsive system (as a bulb, tube, and bellows) continuously measuring the oil temperature and converting the measured temperature into pressure, and a second system continuously producing a pressure commensurate to vapor pressure of the refrigerant in contact with the oil, the pressure created by the first system acting in opposition to the pressure created by the second system to produce a force

differential, as measured by the systems, for operation of a differential pressure switch means to contact and disconnect an oil heater to a power supply to maintain the vapor pressure of the oil solution at a level to limit the absorption of refrigerant in the oil solution.

3,705,500

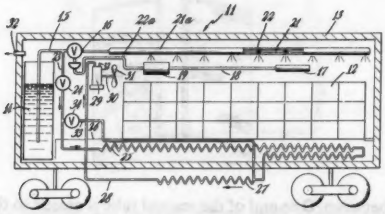
NITROGEN SPRAY REFRIGERATION SYSTEM FOR PERISHABLES

William Robert Jehle, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 776,331, Nov. 18, 1968, abandoned. This application Oct. 22, 1969, Ser. No. 871,797

Int. Cl. F25d *3/10*

U.S. Cl. 62—223 **6 Claims**



A system for more efficient refrigeration of perishable products in trucks and railcars is provided by spraying cold fluid into the product chamber at effective flow rate resulting from maximum flow rating between 30 and 110 lbs. per hour equivalent pure nitrogen per 10 foot average length of storage chambers having cross-sectional area between 40 and 110 ft², and through spaced small openings in a spray conduit of between 0.002 and 0.009 inch² per 10 foot average length.

3,705,501

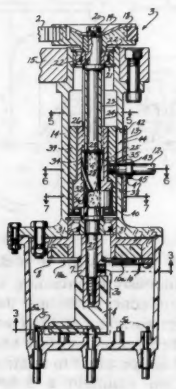
DISTRIBUTOR WITH ROTOR ADVANCE INPUT CONTROL

Floyd M. Minks, Route 1, Box 41, Kissimmee, Fla.

Filed July 8, 1971, Ser. No. 160,843

Int. Cl. F16d *5/00*

U.S. Cl. 64—25 **17 Claims**



A distributor includes a fixed tubular housing having a mounting flange and a contact cap secured to the flange and having a rotor shaft journaled in the one housing end. A rotor is secured to the shaft. An engine shaft is journaled in the housing's opposite end and coupled to the engine crankshaft. A sleeve extends over the shafts and includes a pair of diametrically opposite radial grooves mating with radial projections of the engine shaft and a pair of generally spiral grooves between the radial grooves mating with spiral projections on the rotor shaft. The sleeve is journaled in a non-rotating, axially movable tubular support member. Alternatively, the sleeve is coupled to the rotor shaft with a radial projection and slot. The engine shaft is a tubular member. The sleeve and engine shaft having mating and complementing cam edges. A throttle lever is connected to the support member axially with the throttle control to thereby rotate the rotor shaft relative to the engine shaft to advance and retard the timing.

3,705,502

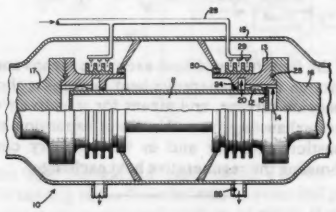
LIQUID COOLED SEAL LUBE COUPLING

George L. Padgett, Greenville, S.C., assignor to General Electric Company

Filed Feb. 26, 1971, Ser. No. 119,142

Int. Cl. F16d *3/84*

U.S. Cl. 64—32 R **7 Claims**



A liquid cooled, sealed lubrication gear type coupling for connecting a pair of rotating machine shafts. A sealed liquid lubricant reservoir is provided between inner and outer coupling members so as to lubricate interlocked gear teeth, while fluid coolant is distributed over the outer member to dissipate heat transferred from the inner member to the outer member.

3,705,503

APPARATUS FOR FORMING A SYSTEM OF WEFT THREADS FOR FURTHER PROCESSING IN TEXTILE MACHINES

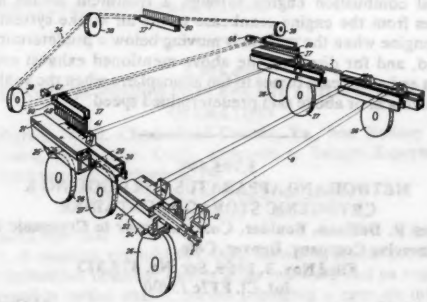
Josef Skopalik; Vladimir Svoboda, and Vaclav Opatril, all of Brno, Czechoslovakia, assignors to Elitex, Zavody Textilniho Strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia

Filed June 4, 1971, Ser. No. 150,076

Claims priority, application Czechoslovakia, July 2, 1970, 4605/70

Int. Cl. D04b *23/06*

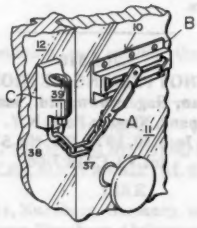
U.S. Cl. 66—84 R **10 Claims**



Apparatus for forming a system of weft threads for further processing in textile machines as e.g. stitch knitting machines, warp knitting machines and Raschel machines to the operating mechanisms of which there are fed mutually parallel weft threads. The apparatus includes two continuously and

uniformly moving weft thread conveyors which are vertically movable with respect to each other; a first one of such conveyors conveys the weft threads in a longitudinal direction to the operation point of the textile machine, and the second conveys the weft threads transversely from the thread supply onto the said first conveyor. The first longitudinal conveyor is provided with grippers with movable gripping jaws; the second transverse conveyor is provided with at least three transfer battens carrying transfer grippers which are provided with at least three stationary means which come into direct contact with the weft thread and at least one means mounted for movement with respect thereto.

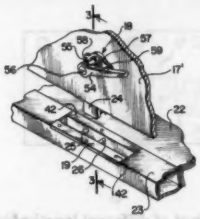
3,705,504
CHAIN DOOR LATCH DEVICE
Dewey F. Johnson, 8240 N.W. 1st Place, Miami, Fla.
Filed Sept. 7, 1971, Ser. No. 178,319
Int. Cl. E05c *17/36*
U.S. Cl. 70—93 **4 Claims**



A chain door latch device adapted for use for inwardly and outwardly swinging doors having a latch bracket mounted on either the door or the jamb and a chain fastening member mounted on the other of the door or jamb with the other end of the chain connected to a latch slide member. The latch bracket is provided with an elongated slot with an enlarged opening at each end of the slot. The latch slide member has mounted on its free end a matching enlarged member that is received by the enlarged openings in the latch bracket and permitting the sliding movement of the latch member along the length of the latch bracket. However, the latch bracket is provided with a resilient member at the enlarged opening nearest the chain fastening member to prevent removal of the latch slide member therefrom, the other enlarged opening being so positioned that the latch member must be swung through an arc in a direction away from the chain fastening member to be removed from the latch bracket.

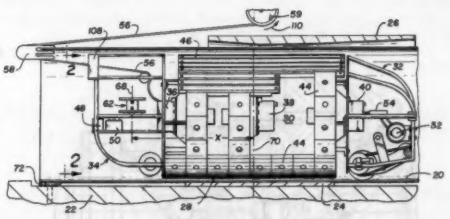
3,705,505
LOCK LATCH ASSEMBLY FOR COUNTERBALANCED CARGO CARRYING VEHICLE DOORS
Charles D. Landow, Bronx, and Ettore Mutalipassi, Yonkers, both of N.Y., assignors to United Overhead Door Corp., Yonkers, N.Y.
Filed May 6, 1971, Ser. No. 140,663
Int. Cl. E05b *65/16*; E05c *3/26*
U.S. Cl. 70—99 **3 Claims**

A latch lock assembly is provided which is formed of two spaced plates with pivotal levers disposed therebetween and wherein the plates are provided with a depending projection of a width and spacing and depth and extending from the bottom edge of the door which will fit into a keeper having parts shaped to exactly contain the projection on the latch lock assembly when the door bearing the latch lock is lowered to a locking position. A hooked lever lies within the assembly and between the plates and depends into the plate projections for engagement with one of two space rods in the keeper. When this projection lies within the keeper in a locked position it exactly fills the keeper opening so as to retain the door against lateral play, fore and aft movement and vertical movement either down or up and thereby rigidly retains the door in its locked and lowered position. The hook lever that extends into the projection spring biased toward an open position and is lifted and latched by a projection on a bell crank lever as the door is seated with the latch projection in the keeper. A turn



handle having a cylinder lock extends through the door and into the latch assembly and has a work arm that engages with the bell crank lever that can be turned when the cylinder lock is opened with a key so as to release the bell crank lever from the hook lever and allow thereby the door to be elevated and the projection out of the keeper.

3,705,506
AUTOMATIC POSITIONING DEVICE
Edward A. Clavin, Houston; Donald H. McCullough, Cypress, and David R. McCullough, Houston, all of Tex., assignors to Cre-Crose International, Inc., Houston, Tex.
Filed March 31, 1971, Ser. No. 129,702
Int. Cl. B21d *9/00*, *11/22*
U.S. Cl. 72—21 **20 Claims**

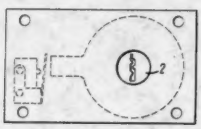


A method and apparatus for rapidly positioning a movable device longitudinally inside a tubular structure, such as a pipe, wherein a sensing means attached to said movable device functions to position said movable device responsive to a changing magnetic field generated by an establishing means positioned at a preselected location exterior to said pipe. When said movable device is required to be sequentially positioned longitudinally at a series of locations in one direction inside said pipe, the method and apparatus automatically repositions said movable device at each location in the desired sequence. This abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,705,507
LOCK CONTROLLED ELECTRIC SWITCH MECHANISMS
Kenneth Douglas Sanders, London; Geoffrey Sword, Botley, and Jack William Taylor, Bournemouth, all of England, assignors to Credit Keys Limited, Winchester, England
Filed May 14, 1971, Ser. No. 143,439
Int. Cl. E05b *29/00*, *39/04*
U.S. Cl. 70—364 R **6 Claims**

An electric switch lock mechanism having a hollow housing with several electric switches and a number of switch actuat-

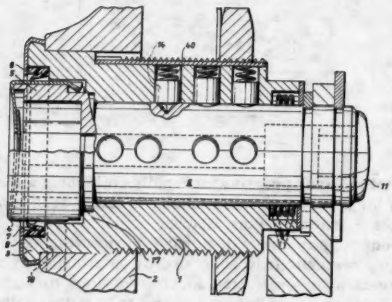
ing elements operated by cams actuated by a lock assembly rotatable in the housing, the lock assembly including several moveable wafer-like elements transversely moveable in the assembly biased some into engagement with abutments in the housing and the remainder into engagement with the cam elements, the wafer-like elements having slots in alignment axially of the assembly but of different lengths for engagement by a key of varying contour inserted therethrough axially of the assembly, the key when inserted moving the wafer-like elements to free them from the housing and enabling the key to rotate the assembly and actuate the switches through the cams and switch actuating elements.



3,705,508
LOCKS

Walter Fritsch, Zell a. N.; Erick Hetziner, Esslingen a. N., and Karl Worner, Reichenbach/Fils, all of Germany, assignors to Pebra G.m.b.H. Paul-Braun, Esslingen, Germany

Filed March 9, 1970, Ser. No. 17,839
Claims priority, application Germany, March 14, 1969, G 69 10 308.8; March 14, 1969, G 69 10 307.7
Int. Cl. E05b *9/04, 27/08*
U.S. Cl. 70—373 **2 Claims**



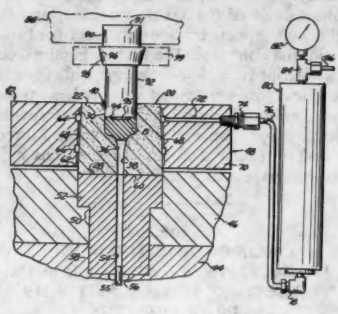
A lock comprising a cylinder having a bore, a plug rotatably received in the bore, the bore being of such configuration as to prevent lock freezing.

3,705,509
FLUID-CONDUCTING HOT-FORGING DIE AND METHOD OF MAKING THE SAME

John Haller, Northville, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Nov. 12, 1969, Ser. No. 875,975
Int. Cl. B21b *45/02*; B21c *43/00*; B21k *5/20*
U.S. Cl. 72—45 **1 Claim**

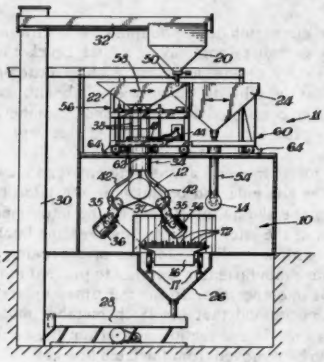
A foraminous ordinary-duty hot-forging die is provided with minute fluid passageways therethrough for the conduction of a coolant, a lubricant or a protective atmosphere under high pressure. A porous hot-forging die is made by forming a briquette of coarse powdered tool metal or carbide, sintering the briquette, machining a die cavity or die bore therein, and heat-treating the thus-formed die for the required hardness and wear resistance.



3,705,510
SHOT PEENING METHOD

Davis L. Baughman, Hagerstown, Md., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed June 30, 1970, Ser. No. 51,125
Int. Cl. C21d *7/06*
U.S. Cl. 72—53 **12 Claims**



Metal sheets are peen formed by projecting peening shot from centrifugal shot throwing wheels against the sheet passing thereunder. The centrifugal shot throwing wheels are also used for saturation peening metal objects.

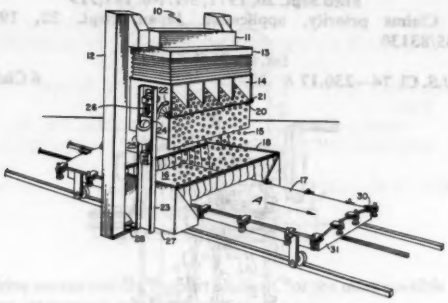
3,705,511
LOW PENETRATION BALL FORMING PROCESS

Wynand W. Brandel, Nashville, and Lawrence S. Klass, Donelson, both of Tenn., assignors to Avco Corporation, Nashville, Tenn.

Filed Oct. 17, 1969, Ser. No. 867,132
Int. Cl. B21j *5/00*
U.S. Cl. 72—53 **3 Claims**

A controlled metal deformation process for shaping, forming or contouring metal sheet, plate, and wrought shapes such as extrusions comprising flowing a quantity of metal balls (generally greater in size and mass by several orders of magnitude than standard shot consisting of an aggregate of sizes used in conventional shot peening processes) over the surface to be deformed. The novel process includes impacting the surfaces with metal balls at relatively low velocities, such as by

using the force of gravity and resulting in low penetration of ball into metal surface, while the part being formed is in a



prestressed condition and moving through the metal ball delivery stream.

3,705,512

BENDING TOOL FOR BENDING DEFORMABLE WORKPIECES, SUCH AS METAL SHEETS AND THE LIKE

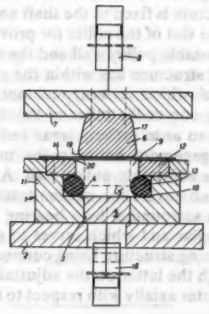
Karl Koschatzky, Nurnberg, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft Zweigniederlassung Nurnberg, Nurnberg, Germany

Filed Jan. 27, 1971, Ser. No. 110,099

Claims priority, application Germany, Jan. 28, 1970, P 20 03 614.0

Int. Cl. B21d 22/10

U.S. Cl. 72—57 5 Claims



A device for bending deformable workpieces, especially metal sheets, in which in the path of movement of the male die below a holding jaw on opposite sides of said die there is provided an elastic counter bearing each respectively located in recess means adjacent the mold bottom through which extend a reciprocable piston operable both as counterpressure plate during the shaping action of said die and as an ejector at the end of said shaping action, said elastic bearing means extending into the path of movement of said die prior to its shaping operation and being elastically displaceable by said die during its shaping operation into said recess means adjacent the mold bottom.

3,705,513

ROLLING HIGH HELIX PINIONS

David W. Daniel, Birmingham, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Nov. 19, 1970, Ser. No. 90,946

Int. Cl. B21h 5/00

U.S. Cl. 72—102 7 Claims

Rolling pinions having a high helix angle using a helical roll with the teeth of the roll inclined at a helix angle such that axial thrust on the pinion due to inclination of the teeth is substantially counterbalanced by axial thrust due to crossed axes sliding.

3,705,514

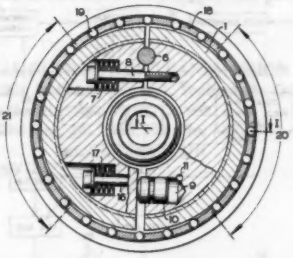
PRESSURE ROLLER DEVICE

Bernhard Kunze, Erkelenz, Germany, assignor to Wilhelm Hegenscheidt Kommanditgesellschaft, Erkelenz, Germany

Filed July 7, 1971, Ser. No. 160,301

Int. Cl. B21d 3/02

U.S. Cl. 72—120 10 Claims



A device for smoothing the inner surface surrounding a bore has a core which can be rotated about an axis and a ring which surrounds the core and is fast therewith. The ring is composed of two or more circumferentially adjacent sections which are mounted so that they can be radially displaced relative to one another and the axis of rotation of the core. The radial thickness of these sections is less in the region of the juncture than intermediate these regions. Roller elements of cylindrical configuration are carried by the outer periphery of the ring and, when the device is inserted into a bore, will contact the inner surface surrounding the same and smooth it during rotation.

3,705,515

FULL LENGTH CARTRIDGE CASE RE-SIZING

Richard J. Lee, RR. No. 2, Hartford, Wis.

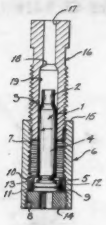
Filed Dec. 28, 1970, Ser. No. 101,981

Int. Cl. B21d 51/54

U.S. Cl. 72—367 4 Claims

A spent gun cartridge case is re-sized for its full length by placing it on a threaded support and then threadably joining

the support-case assembly with a die. The case is freely supported on a thrust bearing so that the case rotates with the die



as the members are threaded together. Alternately, the case and die are startingly joined and the resultant assembly threaded onto the support.

3,705,516

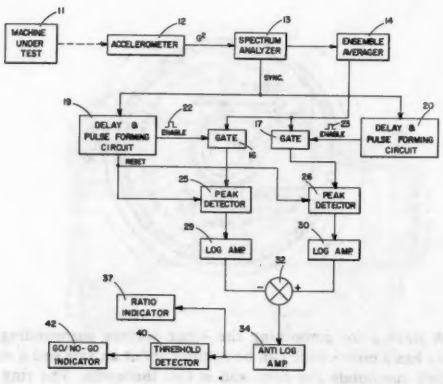
METHOD AND APPARATUS FOR TESTING THE CONDITION OF A MACHINE

James John Reis, Torrance, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Sept. 30, 1971, Ser. No. 185,193

Int. Cl. G01h *1/04*; **G01m** *13/02*

U.S. Cl. 73—71.4 **11 Claims**



The vibrational components over a frequency spectrum of interest developed by a machine are transformed into electrical signals by means of a transducer such as an accelerometer, and these electrical signals in turn are processed by means of a spectrum analyzer to provide a power spectral density plot thereof. The peak amplitude of the signals in a pair of preselected frequency bands is then detected and the ratio between these two signals determined. This ratio is then compared against a value representing an acceptable ratio experimentally or theoretically derived to determine whether the measured ratio is within acceptable tolerances for the machine. The bands utilized are preferably a first band within a high frequency vibrational range, and a second band lower in frequency than this first band with the signals in these bands being of medium amplitude relative to all of the signals developed in the spectral analysis.

3,705,517

ADJUSTABLE BELT-AND-PULLEY TRANSMISSION

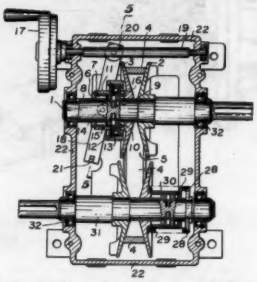
Ichiro Yamanaka, Osaka, and Akihide Okumura, Amagasaki, both of Japan, assignors to Nihon Spindle Seizo Kabushiki Kaisha, Amagasaki-shi, Hyogo-ken, Japan

Filed Sept. 20, 1971, Ser. No. 181,919

Claims priority, application Japan, Sept. 22, 1970, 45/83130

Int. Cl. F16h *55/22*

U.S. Cl. 74—230.17 A **6 Claims**



An adjustable belt-and-pulley transmission wherein a rotary shaft carries a pulley composed of a side wall which is fixed to the shaft and an adjustable side wall which is axially movable along the shaft while being constrained to rotate therewith. These pulley side walls have inner tapered surfaces forming parts of cones whose apexes coincide with the axis of the shaft so that a belt engaging these surfaces can have its radial distance from the shaft regulated in accordance with the axial distance of the adjustable pulley side wall from the fixed side wall thereof. The adjustable pulley side wall has an elongated collar fixed thereto and surrounding the shaft with clearance, this collar being formed with an elongated slot which extends longitudinally of the shaft. Between the collar and the shaft is a longitudinally slit wear-resistant, self-lubricating, resilient sleeve which prevents direct contact between the collar and the shaft and which because of the slit is capable of automatically expanding and contracting around the shaft and within the collar in response to temperature changes. A motion-transmitting structure is fixed to the shaft and extends through the sleeve into the slot of the collar for providing transmission between the adjustable pulley wall and the shaft, and this motion-transmitting structure has within the slot of the collar a covering material which is wear-resistant and resilient for directly engaging one or the other of the side surfaces of the slot of the collar so as to prevent wear and reduce friction at the point of engagement between the motion-transmitting structure and the adjustable pulley wall. An elongated cover covers the slot and covers the motion-transmitting structure, and this cover is surrounded by a bearing structure which is carried by the collar and which serves to retain the cover at the slot, an adjusting structure being connected to the bearing for acting through the latter on the adjustable pulley side wall for shifting the latter axially with respect to the shaft.

3,705,518

DRIVE FOR ROTATABLE PARTS

Alfons Ernst, and Werner Jung, both of Traunrent, Germany, assignors to Firma Dr. Johannes Heldenhain, Traunreut, Germany

Filed Nov. 16, 1970, Ser. No. 89,926

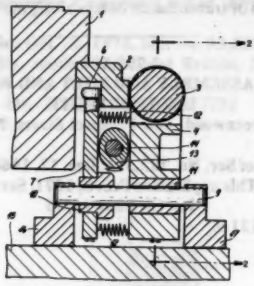
Claims priority, application Germany, Nov. 21, 1969, P 19 58 393.8; Nov. 27, 1969, P 19 59 517.6

Int. Cl. F16h *57/00*

U.S. Cl. 74—410 **19 Claims**

A mechanical, play free drive for rotatable parts in particular in precision devices, which comprises a driven gear provided on the rotatable parts. A drive means drives the driven

gear. A support element is in radial direction opposite to the driving means, and the driven gear is tong-like embraced by



the drive means and the support element, for the most possible movement transmission free from forces.

3,705,519

SINGLE-LEVER MECHANISM

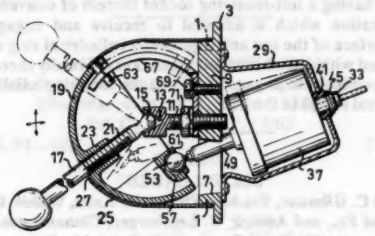
Bertil Roland Sjoo, Bromma, Sweden, assignor to Hesselman Bil-Aero AB, Hagersten, Sweden

Filed Dec. 21, 1970, Ser. No. 100,272

Claims priority, application Sweden, Dec. 23, 1969, 17893/69

Int. Cl. G05g 9/04

U.S. Cl. 74—471 XY **11 Claims**



A single operating lever control device for selectively operating two trim tabs for a motor boat individually or simultaneously in the same or opposite directions. The operating lever is provided with an inverted semi-spherical bowl movable in a semi-spherical housing. The inner end of the lever is pivoted in a socket bearing at the sphere center point. The bowl edge is provided with bearings for the ends of piston rods of pneumatic cylinders connected with trim tab operating means. The bowl is prevented from rotating but may be pivoted in any direction, thereby permitting free choice of correlation between the piston rod movements and thus the trim tab settings.

3,705,520

DEPRESSED PARK WINDSHIELD WIPER SYSTEM

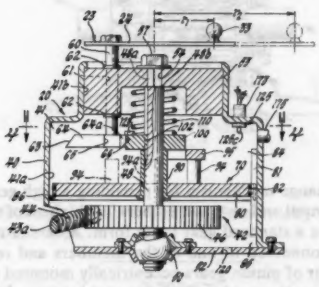
Keith H. Carpenter, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 21, 1971, Ser. No. 191,385

Int. Cl. B60s 1/24

U.S. Cl. 74—600 **3 Claims**

In a preferred form, this disclosure relates to an actuating mechanism for oscillating a pair of windshield wipers across the windshield between inboard and outboard positions during running operation and for moving the wipers to a depressed park position when running operation is being terminated. The actuating mechanism comprises a housing means, an annular drive member rotatably supported by the housing means, a drive shaft rotatably supported by the housing means for rotation about its axis and drivingly connected with the drive member and a drive means operatively connected with the drive shaft for rotating the same. The actuating mechanism further comprises a crank assembly including a crank arm which is adapted to be connected with the wipers and a crank shaft eccentrically and rotatably supported by the drive member. The actuating mechanism additionally includes a shiftable means slidably supported on the drive shaft and the housing means and which is spring biased toward a first position in which it engages the crank assembly to lock the same against rotation relative to the drive shaft so that the crank assembly rotates with the drive member about the axis of the drive shaft during running operation of the wipers and which is shiftable by fluid pressure toward a second position in which it disengages the crank assembly and rotates the crank assembly in a direction opposite the direction of rotation of the drive shaft to increase the throw of the crank arm to move the wipers from their inboard position towards their park position.



3,705,521

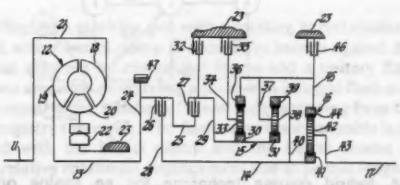
DUAL PATH POWER TRANSMISSION

Marion D. Smith, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 20, 1968, Ser. No. 789,648

Int. Cl. F16h 57/10

U.S. Cl. 74—759 **12 Claims**



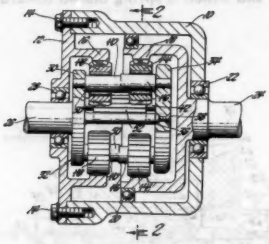
Disclosed herein is a power transmission having two planetary gear groups, one of which is selectively connectable between the torque converter and the output shaft to provide a single power path and the other, a three speed unit, is selectively connectable between the torque converter and the first planetary group to provide a plurality of dual power paths when operated in conjunction with the first planetary group. The two planetary groups may be operated together to provide two reverse drive ratios. A third planetary group, located between the first planetary group and the transmission output, when operated in conjunction with the first planetary group, provides an additional reverse ratio.

3,705,522

SPEED CHANGE MECHANISM

Fremont T. Ogawa, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 30, 1971, Ser. No. 158,169
Int. Cl. F16h *1/28*
U.S. Cl. 74—803 3 Claims



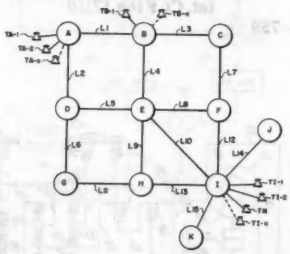
A speed change mechanism for providing a high gear ratio between the input and output members in which all of the gear members have a standard gear tooth form. A carrier member is drivingly connected to one of the members and rotatably supports a pair of pinion gears eccentrically mounted relative to each other on the carrier. One ring gear is secured to a stationary housing and meshes with one of the pinions and a second ring gear drivingly connected to the other member and meshes with the other pinion. A third pinion gear which is an idler member in the system meshes with both of the other pinions through dual tangencies at the pitch diameters of the pinion gears.

3,705,523

HYBRID ROUTING TECHNIQUE FOR SWITCHING COMMUNICATION NETWORK

Frank B. Alouisa, Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Sept. 21, 1970, Ser. No. 73,919
Int. Cl. H04q *3/56*
U.S. Cl. 179—18 EA 28 Claims



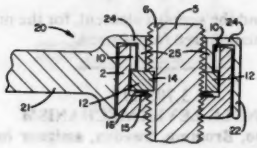
A hybrid routing technique for an analog or digital switching communication network containing several switching centers for contacting a called subscriber at a destination switching center whose location in the network need not be known to the calling subscriber and for providing a deterministic route back from the destination switching center to the originating switching center. The entire system is substantially simultaneously flooded once in parallel radial fashion with a flood signal of simple format containing information representing the calling switching center, the called subscriber and the time or origination of the call; local subscriber directories at each of the switching centers of the network are examined substantially simultaneously to determine which of the switching centers is the destination switching center. The selection of a route between the called and the calling subscribers is done independently of the locating of the called subscriber and allows effective selection of routes, based on an abundance of information available at the switching centers concerning the current status of the network and regardless of transmission delays along the routes.

3,705,524

LOCK NUT ASSEMBLY AND BOLT AND WRENCH FOR USE THEREWITH

Eugene C. Greenwood, 468 Prospect Street, Newport Beach, Calif.

Division of Ser. No. 783,311, Dec. 12, 1968, Pat. No. 3,581,609. This application Feb. 8, 1971, Ser. No. 113,120
Int. Cl. B25b *13/06*
U.S. Cl. 81—121 R 6 Claims



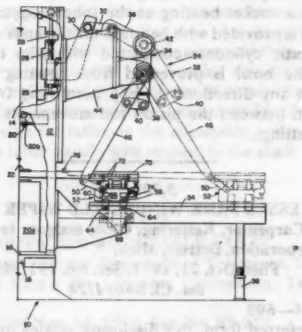
A specialized wrench adapted for use with a lock nut assembly in which a lock ring is axially movable within a central recess in a nut, the wrench comprising a handle and a head portion having a nut-receiving socket therein of conventional configuration which is adapted to receive and engage the outer surface of the nut and a generally cylindrical ring rigidly supported within the nut receiving socket, coaxially therewith, the ring adapted to engage and force the lock ring axially into the central recess in the nut.

3,705,525

DIE UNLOADER

Richard C. Gilmour, Yeadon; Vincent A. Kaitz, Willow Grove, both of Pa., and Adolph W. Lemberger, Cinnaminson, N.J., assignors to The Budd Company, Philadelphia, Pa.

Filed Oct. 15, 1970, Ser. No. 80,854
Int. Cl. B26d *7/18*
U.S. Cl. 83—112 5 Claims

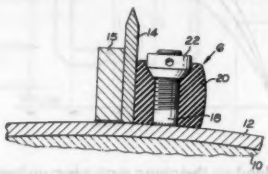


A ram driven, mechanically synchronized die unloader for extending into a blanking press under the upper die of a positive knockout die for receiving and removing the stamped blank from the die.

3,705,526
ROTARY DIE CUTTING BLANKS

Thomas Desmond Bishop, Solihull, England, assignor to The Deritend Engineering Company Limited, Birmingham, England

Filed Oct. 26, 1970, Ser. No. 83,858
Claims priority, application Great Britain, Nov. 7, 1969, 54,569/69
Int. Cl. B31b *1/20*; B26d *7/26*
U.S. Cl. 83—698 **5 Claims**

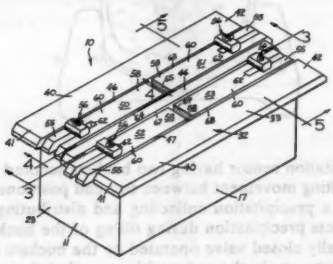


A die for rotary die-cutting of cardboard and similar materials which is of the type comprising a sheet metal forme to lie on the surface of the roller of the die-cutting machine, and with cutting rule supported on the forme by a number of studs, the security of the rule being improved by providing at least one of the studs with a rubber or plastic pad which is deformed on the stud so as to expand the pad radially of the stud and thus grip the rule.

3,705,527
MULTITONE WOODEN DRUM

Stephen G. Burnham, 4312 E. Princeton, Spokane, Wash.

Filed March 20, 1972, Ser. No. 235,986
Int. Cl. G10d *13/08*, *13/02*
U.S. Cl. 84—403 **7 Claims**



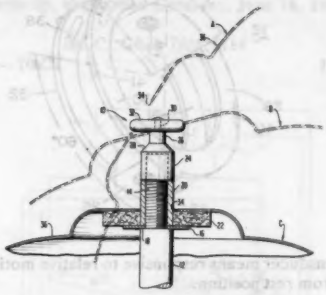
A multitone drum is described having a wooden head and a plurality of solid wooden bars. Each bar is rigidly supported at one end with the other end extending freely in cantilever fashion out over a resonant cavity of the drum.

3,705,528
CYMBAL RETAINER

Charles P. Cordes, 27 Kenneth Place, Clark, N.J.

Filed March 8, 1972, Ser. No. 232,813
Int. Cl. G10d *13/02*
U.S. Cl. 84—421 **4 Claims**

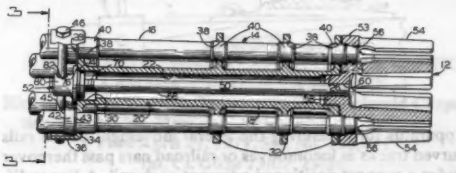
A small cylindrical member is provided with a threaded internal bore for engagement on the end of a standard cymbal rod. The end of the cylindrical member is reduced to form a rod and an oblong keeper bar is rigidly secured to the end of the rod. The dimensions of the keeper bar are so related to the standard cymbal hole that the cymbal may be placed on and taken off the cymbal rod by appropriately angling and moving the cymbal relative to the pin while normally retaining the cymbal on the rod.



3,705,529
FLASH SUPPRESSOR ASSEMBLY FOR GATLING-TYPE MACHINE GUNS

Keith S. Williams, Davenport, Iowa, assignor to The United States of America as represented by the Secretary of the Army

Filed Sept. 25, 1970, Ser. No. 75,514
Int. Cl. F41d *11/00*
U.S. Cl. 89—14 B **7 Claims**



A Gatling-type machine gun with a rotating barrel cluster is provided with a barrel clamp to secure the barrels against displacement effected by centrifugal forces and a unitary flash suppressor assembly comprising a plate with integral flash suppressors equal to the number of the barrels extending from the plate in registry therewith. The flash suppressor assembly is interlocked with the barrel clamp and the barrel cluster to prevent relative rotational displacement and to permit longitudinal displacement thereof relative to the flash suppressor assembly responsive to thermal expansion.

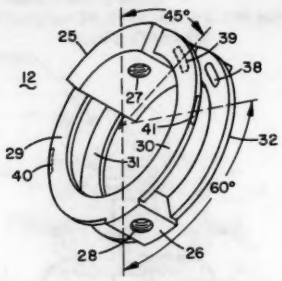
3,705,530
FORCE HUB SENSOR FOR CONTROL WHEEL STEERING

Kenneth H. White, Marion, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed Dec. 14, 1970, Ser. No. 97,556
Int. Cl. G01l *5/22*
U.S. Cl. 73—136 C **17 Claims**

A two-axis force sensor with minimal space requirements is constructed of concentric sleeve members between which a single ring-like elastic member provides a spring restrained coupling as to both relative rotation and axial translation

between the sleeve members. Force readout means may comprise strain gauges attached to the coupling member per se or other transducer means responsive to relative motion between sleeves from rest position.

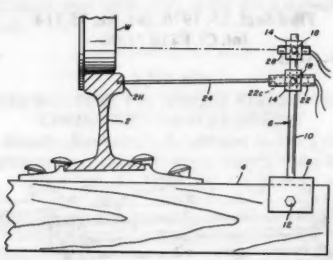


3,705,531

METHOD AND APPARATUS FOR DETERMINING THE OPERATING PERFORMANCE OF WHEELED VEHICLES ON A TRACK

Joseph M. Wandrisco, Lower Burrell, Pa., assignor to United States Steel Corporation

Filed July 6, 1971, Ser. No. 159,897
Int. Cl. G01l 5/20
U.S. Cl. 73—146 **10 Claims**



Apparatus for measuring the lateral movement of the rails of curved tracks as locomotives or railroad cars pass thereover includes a support positioned adjacent each rail. A linear differential transformer carried by the support has its axially movable core connected to the adjacent rail by means of a non-magnetic rod. Movement of the core changes the output of the transformer and this output is connected to a recorder which provides a chart of the movement. A wheeled vehicle known to be in first class shape is first passed over the rail to provide a first chart which will be substantially identical for all vehicles of the same type which are in first class shape. When other similar vehicles whose condition is not known passes over the curved rail and its chart is obtained at the same location a comparison of the two charts will indicate whether or not the wheels, axles, or other truck components of the car are in first class condition or not.

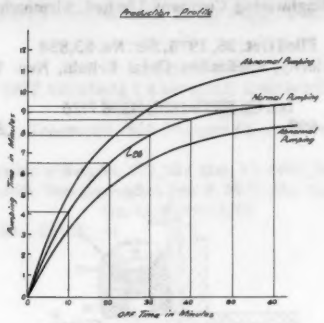
3,705,532

METHODS FOR CONTROLLING PUMPING WELLS

Laurence M. Hubby, Bellaire, Tex., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 692,877, Dec. 22, 1967, Pat. No. 3,610,779. This application May 21, 1970, Ser. No. 48,596
Int. Cl. E21b 47/00
U.S. Cl. 73—155 **6 Claims**

A method and system for pumping-well control including determination of a production profile for the well. The profile consists of a function that defines the normal producing conditions when the well fluid is pumped out of the well at a greater rate than it is produced therein. Optimum producing conditions may then be determined and set. In addition, the magnitude of the load on the pump motor is monitored and fed out for remote indication and/or control.

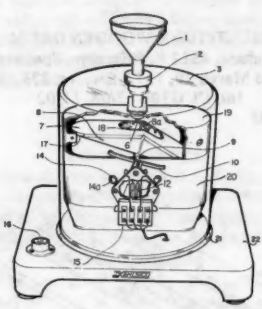


3,705,533

PRECIPITATION SENSOR

Gerald J. Kahl, La Mesa, Calif., and Guido N. Guidelli Guidi, Bologna, Italy, assignors to Kahl Scientific Instrument Corporation, Cajon, Calif. and Societa Italiana Apparecchi Precisione S.p.A., Bologna, Italy, part interest to each

Filed June 23, 1970, Ser. No. 49,033
Int. Cl. G01w 1/14
U.S. Cl. 73—171 **12 Claims**



A precipitation sensor having two buckets secured to each other for tilting movement between two end positions, is provided with a precipitation collecting and distributing means which collects precipitation during tilting of the buckets and has a normally closed valve operated by the buckets to open when the same are in the end positions so that the collected precipitation is alternately discharged into the buckets. Evaporation retarding covers with small inlet cutouts close the tops of the buckets, adjustable elastic abutments stop the buckets without bouncing back, and magnetic switch means generate a counting pulse for each tilting movement.

3,705,534

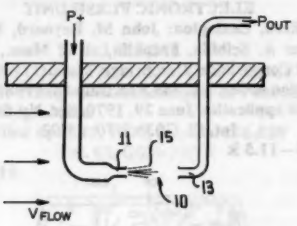
FLUIDIC FLOW SENSING METHOD AND APPARATUS

Robert F. Turek, Silver Spring, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.

Continuation-in-part of Ser. No. 817,717, April 21, 1969, abandoned. This application May 12, 1970, Ser. No. 36,627
Int. Cl. G01f 1/00
U.S. Cl. 73—189 **38 Claims**

Fluidic flow sensing techniques are disclosed which permit sensitive flow measurements over a wider range of flow rates than was heretofore possible. In one embodiment a jet of working fluid, directed parallel to the sensed flow, is modu-

lated by viscous interaction with the sensed flow, thereby changing the downstream dynamic pressure of the jet as a function of the sensed flow. In a second embodiment a jet of working fluid is directed angularly with respect to the sensed flow, producing jet deflection which is monitored as a differential pressure across a pair of downstream receivers. A negative feedback circuit, including a high gain amplifier fed by the differential pressure, controls the jet supply pressure to maintain a differential pressure null across the receivers, thereby rendering the jet supply pressure a function of the sensed flow.



3,705,535

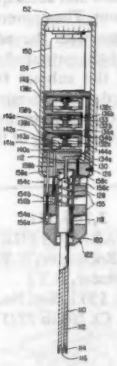
FLUIDIC ON-LINE SYSTEM TESTER

Kenneth W. Cohen, and Thomas E. Martin, both of Chesterland, Ohio, assignors to Bailey Meter Company

Filed Oct. 26, 1970, Ser. No. 83,776

Int. Cl. G01l 7/08

U.S. Cl. 73—420 **8 Claims**



A pressure testing device for on-line testing of a fluidic element in a system where a self-sealing test valve is mounted in the system, and the pressure therein is sensed by a test probe which makes a secondary seal with the valve before breaking the valve's self-seal. This secondary seal is maintained until partial extraction of the probe allows the jack to reseal itself. The secondary seal is broken only upon complete extraction of the probe. The probe capacitance is negligible with respect to the system capacitance in order to prevent sudden pressure drops from occurring. A sensor, amplifier, readout and power supply is built into the probe which is hand held and self-contained.

ERRATUM

For Class 83—478 see:
Patent No. 3,705,611

3,705,536

CAMERA WITH EXPOSURE CONTROL USING A SINGLE MAGNET

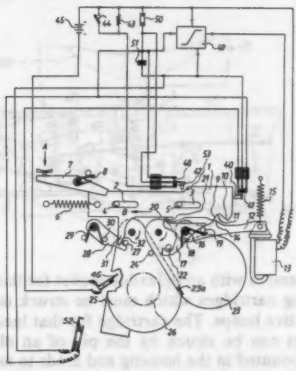
Peter Lermann, Narring, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 11, 1971, Ser. No. 152,267

Claims priority, application Germany, June 16, 1970, P 20 29 784.1

Int. Cl. G03b 7/08, 9/58

U.S. Cl. 95—10 CT **16 Claims**



Activation of a release button starts movement of a control slider along a predetermined path. The start of the slider motion activates a timing circuit furnishing a signal after a fixed time interval, and energizes the magnet. The slider motion is stopped mechanically and resumes only after deenergization of the magnet at the end of the fixed time interval. The magnet is reenergized, the opening blade is pivoted to its exposure position, and an exposure timing circuit activated. After proper exposure, the magnet is deenergized, allowing the shutter closing blade to terminate the exposure.

3,705,537

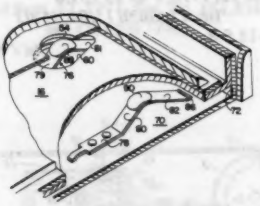
APPARATUS FOR INTERFACING PHOTOGRAPHIC CAMERA AND FILM CARTRIDGE

Richard Paglia, Carlisle, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed April 21, 1971, Ser. No. 136,071

Int. Cl. G03b 19/02, 19/10

U.S. Cl. 95—11 R **11 Claims**

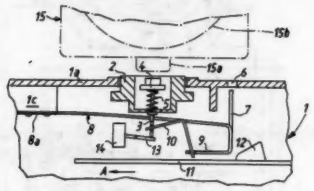


Apparatus for interfacing a photographic camera and film cartridge. More particularly, the illustrated film cartridge contains a stack of film units of the "self-developing" type and a flat battery for energizing electrically powered components in a camera which receives the cartridge. A pair of apertures of novel configuration in the cartridge bottom wall expose terminals on the battery. The apertures and a pair of novel electrical contacts on a camera back adapted to mate with the apertures provide improved cartridge guidance and assure a good electrical union of the contacts with the battery terminals.

3,705,538
PHOTOGRAPHIC APPARATUS FOR USE WITH IMPELLER-ACTUATED SOURCES OF ARTIFICIAL LIGHT

Johann Putscher, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed May 26, 1971, Ser. No. 146,965
Claims priority, application Germany, May 29, 1970, P 20 26 341.6
Int. Cl. G03b 15/04, 15/03
U.S. Cl. 95—11.5 R 9 Claims

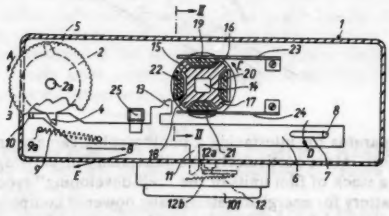


A still camera with an indexible socket for flashcubes of the type having cartridges which must be struck in order to fire the respective lamps. The cartridge for that lamp which faces the subject can be struck by the pin of an elastic impeller which is mounted in the housing and tends to maintain its pin in a retracted position. The base of the properly inserted flashcube depresses a shaft to stress an L-shaped leaf spring which is coupled to the shaft and to the impeller. A release element is movable with reference to the camera body to engage the impeller and to thereby move the spring from a first stable position through and beyond a neutral position so that the spring snaps over to assume a second stable position and to thereby propel the pin against the cartridge. The shaft can adjust the shutter in response to insertion of the base into the socket to select an exposure time which is best suited for the making of exposures with artificial illumination of the subject.

3,705,539
PHOTOGRAPHIC APPARATUS WITH DETACHABLE SOURCE OF ARTIFICIAL LIGHT

Karl Wagner, Ottobrunn; Klaus Nicolai, Grunwald; Gerhard Schuchardt, and Johann Putscher, both of Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 10, 1971, Ser. No. 151,646
Claims priority, application Germany, June 12, 1970, P 20 29 140.1; June 12, 1970, P 20 29 139.8
Int. Cl. G03b 15/04, 15/03
U.S. Cl. 95—11.5 R 40 Claims

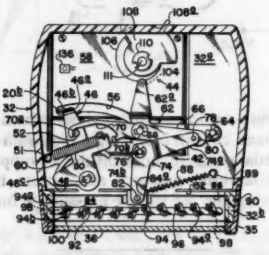


The body of a still camera has a fixedly mounted socket for reception of the foot of a flashcube which is rotatable with reference to the socket in order to place successive lamps into an optimum position for illumination of the subject. The flashcube can be rotated by way of its foot or by way of its casing and the socket is provided with a detent structure which can yieldably hold the flashcube in a selected position. The means for rotating the flashcube constitutes the film transporting and/or the shutter actuating mechanism of the camera.

3,705,540
ELECTRONIC FLASH UNIT

John M. Reed, Lexington; John M. Reynard, Framingham, and Peter A. Scibilia, Franklin, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 745,813, July 18, 1968, abandoned.
This application June 29, 1970, Ser. No. 56,079
Int. Cl. G03b 9/70, 15/02
U.S. Cl. 95—11.5 R 32 Claims

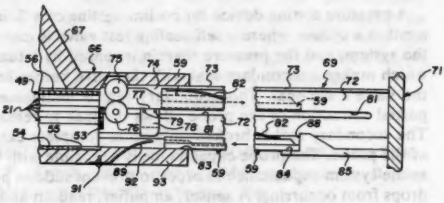


A photographic flash unit having a plurality of pivotable louvers mounted at the open face of the unit housing. The unit is provided with a mechanism for adjusting the position of the louvers to control the amount of light emitted by the unit during flash operation, and a mounting member for detachably connecting the flash unit to a camera. The unit also has a manually-operable trim device for producing an overall shift in the adjusting mechanism and subsequently in the degree of light output of the flash unit. The camera has a distance setting element which cooperates with the adjusting mechanism of the flash unit to vary the light output of the flash unit as a function of the distance of the subject from the camera. The manually-operable trim device permits the operator of the camera to produce an overall shift in the degree of light output of the flash unit at any given setting of the distance setting element of the camera.

3,705,541
FILM UNIT AND APPARATUS FOR USE THEREWITH

Guilford Edwin Kindig, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 2, 1971, Ser. No. 159,322
Int. Cl. G03b 17/57
U.S. Cl. 95—13 14 Claims



A self-processing film unit including an image-recording element separably coupled to a rigid frame; is usable in photographic apparatus having means for separating the element from the frame. Grooves in the frame underlie the image-recording element for receiving and guiding stripper fingers of the apparatus as the fingers are moved in a longitudinal

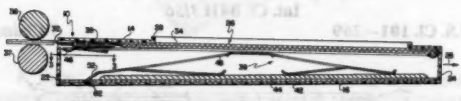
direction relative to the element. After penetrating between the element and the frame, relative movement in a direction generally perpendicular to the longitudinal direction is effected between the fingers and the frame to accentuate the separating action of the fingers.

3,705,542

PHOTOGRAPHIC FILM CARTRIDGE

Nicholas Gold, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed April 21, 1971, Ser. No. 136,029
Int. Cl. G03b 19/10
U.S. Cl. 95—19 11 Claims



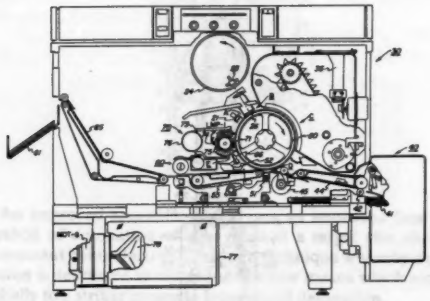
This disclosure depicts film cartridges for storing a plurality of film units in stacked relationship for successive exposure in photographic cameras of the "self-developing" type. The cartridges disclosed each include a spring platen for urging a plurality of film units stacked thereon toward an exposure window in a top wall of the cartridge. A number of embodiments of devices for retaining and accurately positioning the spring platen are disclosed.

3,705,543

OPTICAL RECORDER

James D. Rees, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 28, 1970, Ser. No. 101,701
Int. Cl. B41b 15/06, 17/34
U.S. Cl. 95—4.5 R 10 Claims



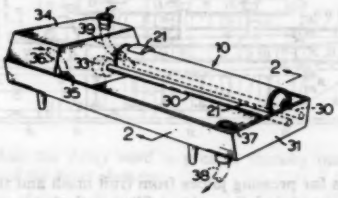
Non-impact printing or recording apparatus adapted for use with a digital computer. The apparatus is characterized by the employment of an optical character generator and timing system therefor capable of printing information on a moving photoresponsive medium. The apparatus is further characterized by the provision of a field mask disposed intermediate a lens system and the photosensitive medium which field mask prevents projection of more than one character from a column of characters.

3,705,544

METHOD OF PROCESSING PHOTOGRAPHIC MATERIAL

Simon Ratowsky, Willowdale, Ontario, Canada, assignor to Ontario Development Corporation

Continuation-in-part of Ser. No. 848,042, Aug. 6, 1969. This application Nov. 5, 1971, Ser. No. 196,075
Claims priority, application Great Britain, Aug. 10, 1968, 38,333/68; March 11, 1969, 12,655/69
Int. Cl. G03d 3/08
U.S. Cl. 95—93 7 Claims



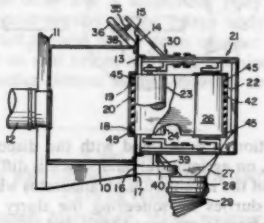
A method of processing photographic material of the sheet or roll type including the steps of mounting the photographic material arcuately in a cylindrical carrier which is horizontally disposed with respect to the axis of arcuation, introducing a predetermined quantity of processing liquid into the lower portion of the cylindrical carrier, rotating the carrier abouts its longitudinal axis, and simultaneously oscillating the carrier (a) in a non-horizontal plane passing through its longitudinal axis, and (b) about a fulcrum centrally located on the longitudinal axis, to produce a continuous wave form in the liquid traveling back and forth along the carrier.

3,705,545

RELEASABLE SECUREMENT MEANS FOR SEALING WEB

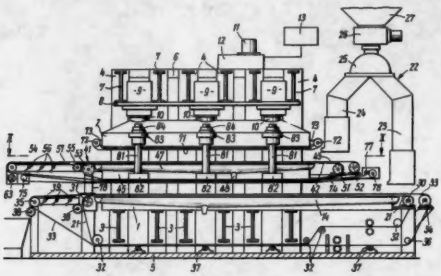
Robert C. Overmyer, Indianapolis, and Adolph J. Nordman, Wabash, both of Ind., assignors to Hawley Manufacturing Corporation, Indianapolis, Ind.

Filed Sept. 17, 1971, Ser. No. 181,516
Int. Cl. F23j 11/02
U.S. Cl. 98—115 VM 6 Claims



Magnetic or hook-and-loop tape system for releasably securing the sealing web to the apertured header wall in a "-TRAV-L-VENT" type of ventilating system.

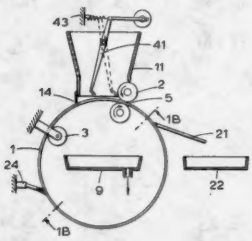
3,705,546
FRUIT PRESS
Otto Gunkel, Badgasse 34, Heilbronn, Germany
Filed Feb. 24, 1971, Ser. No. 118,352
Claims priority, application Germany, Feb. 25, 1970, P 20 08 738.1
Int. Cl. B30b 9/24
U.S. Cl. 100—118 11 Claims



A press for pressing juices from fruit mash and the like, in which the mash is delivered to a filter cloth that is moved into the press between a press punch and the bed member and beneath which filter cloth is a grate band between the bars of which the expressed juice flows to a collecting trough.

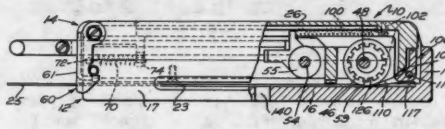
The press, furthermore, has at least one table member suspended from the press punch and which table member also carries a grate band and a filter cloth. A charging device supplies fruit mash to both of the filter cloths to be conveyed into pressing condition so that in one pressing operation at least two layers of fruit mash are pressed. The grate bands and filter cloths are intermittently driven and cleaning devices are provided for the cleaning thereof following each pressing cycle. Each table member has a cover plate on the bottom beneath the return reach of the respective grate band and filter cloth and a cover cloth is provided for the lower face of the cover plate.

3,705,547
FILTRATION APPARATUS
James Harold Laurie, Old Hall Farm, Carleton Rode, Norwich, Norfolk, and Raymond Alfred Cole, Feildings Heywood-Diss, Norfolk, both of England
Filed Dec. 21, 1970, Ser. No. 102,402
Int. Cl. B30b 9/20
U.S. Cl. 100—121 12 Claims



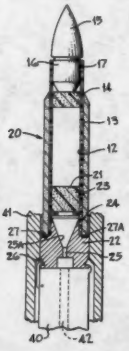
The invention is concerned with the disposal of effluent material, e.g. on agricultural land which is difficult to handle. The feature of the invention is an apparatus which can handle solid liquid slurries by squeezing the slurry through a nip between a rotatable apertured shell and squeeze rolls having deformable outer surfaces which are positioned above and beneath the apertured shell and in contact therewith. The shell is supported for rotation and is rotated by the squeeze rolls which are driven in sufficiently firm contact with the shell to achieve this effect and to assist in the passage of effluent material through the nip. A further feature of using deformable squeeze rolls is that the lower roll extends into the apertures in the shells so as to keep them substantially clear of solid material. The effluent is normally fed to the top surface of the shell immediately before the nip and filter liquor passing through the shell is collected by appropriate means. Liquid with a very small amount of solid material is handled by using two pairs of squeeze rolls on one shell and feeding to the shell before the nip of the first rolls a fibrous material which forms a mat on the shell surface between the two nips. The mainly liquid effluent is then fed onto this mat between the two sets of squeeze rolls.

3,705,548
ROLLER ADJUSTMENT FOR IMPRINTING DEVICE
John E. Waterman, Chepachet, R.I., assignor to The Entwistle Company, Providence, R.I.
Filed April 27, 1970, Ser. No. 31,907
Int. Cl. B41f 3/56
U.S. Cl. 101—269 7 Claims



A portable imprinting device for transferring indicia from an embossed printing plate to a paper form, the device having a roller carriage assembly that includes means for adjusting the position of the imprinting roller relative to the paper form in order to effect a proper imprinting action on the paper form.

3,705,549
AMMUNITION
Joseph B. Quinlan, Philadelphia, Pa., and John J. Scanlon, Jr., Monroe, Conn., assignors to The United States of America as represented by the Secretary of the Army
Continuation-in-part of Ser. No. 749,642, Aug. 2, 1968, abandoned. This application Nov. 25, 1970, Ser. No. 92,758
Int. Cl. F42b 9/16
U.S. Cl. 102—40 6 Claims



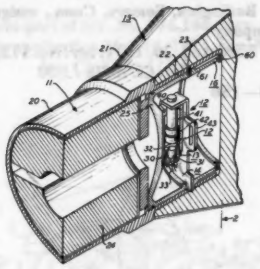
Caseless and semi-caseless rounds of ammunition produced at very high production rates in which a molded cylinder of propellant charge has a maximum of impact strength. A support tube of combustible material lines the cylinder inner surface and its forward end receives a projectile that may seat against a bullet support plug, the plug and projectile being secured to the tube inner surface by a film of combustible adhesive. Similar adhesive secures the tube to the molded cylinder, and a primer disc or stub obturator to the tube.

3,705,550

SOLID ROCKET THRUST TERMINATION DEVICE

James A. Long, Wharton, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Nov. 2, 1970, Ser. No. 85,933
Int. Cl. F42b *15/10*; A47f *3/04*
U.S. Cl. 102—49.5 4 Claims



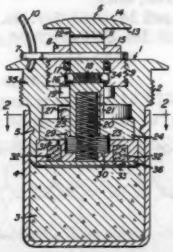
A thrust termination device for terminating solid rocket propellant thrust at a pre-selected point in the rocket trajectory responsive to a signal from an onboard sensing device, to actuate and move a restrainer element out of its blocking position in a resilient and tensioned split ring which thereupon concentrically collapses and compacts to free the rocket motor forward head portion for movement in a thus predictable path, and to enable the extinguishing of the projectile propellant and the termination of rocket thrust, to enable precise range pre-selection between the points of maximum attainable range and the minimum launch-associated range of the rocket.

3,705,551

PUSH BUTTON MUNITION

Aaron S. Berlin, Wilmington, Del., and Vincent C. Little, Fallston, Md., assignors to The United States of America as represented by the Secretary of the Army

Filed Oct. 2, 1970, Ser. No. 77,462
Int. Cl. F42b *27/00*
U.S. Cl. 102—64 5 Claims



An improved munition which uses an improved fuze and method of detonation of a payload at a target site; the improvement being the utilization of a technique whereby a push button is depressed to release an initiator means which rotates radially to a striker means to bring about detonation.

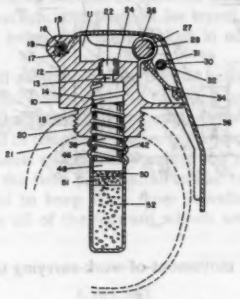
3,705,552

PYROTECHNIC COILED DELAY CORD ASSEMBLY FOR HAND GRENADE FUZE

Russell E. Lerman, Morris, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Feb. 8, 1971, Ser. No. 113,416
Int. Cl. F42b *27/00*; F42c *9/10*
U.S. Cl. 102—64 3 Claims

An improved hand grenade fuze that has an out-of-line metal sheathed pyrotechnic delay cord helically wound about a mandrel. The delay cord forms the threads of a delay-detonator assembly which cannot be screwed into the fuze



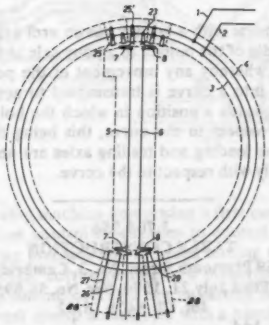
head unless the delay cord is present thereby insuring the presence of the delay element.

3,705,553

TURNTABLE FOR ELECTRIC TOY AND MODEL RAILROAD INSTALLATIONS

Max Ernst, Lohengrinstrasse 14, 85 Nurnberg, Germany

Filed Oct. 5, 1970, Ser. No. 77,888
Claims priority, application Germany, Oct. 3, 1969, P 19 49 974.2
Int. Cl. B60s *13/02*
U.S. Cl. 104—35 10 Claims



A turntable for electric toy and model railroads having a rotatable bridge body and a supporting body therefor, in which the marginal portion of the bridge body has contact members inserted therein which form counter contacts for spring contacts on said bridge body and are electrically connectable to annular current feeding lines on the supporting body.

3,705,554

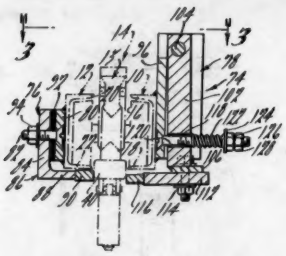
TROLLEY RETARDER FOR POWER AND FREE CONVEYORS

Stephen M. Aksamit, Melvindale, Mich., assignor to Standard Alliance Industries, Inc., Chicago, Ill.

Filed Aug. 26, 1970, Ser. No. 67,063
Int. Cl. B61h *13/00*; B61k *7/00*
U.S. Cl. 104—250 5 Claims

A trolley retarder for power and free conveyor systems

comprising separate brake devices mounted on opposite sides of the conveyor track and adapted to engage and to frictionally retard movement of work carrying trolleys along the track.

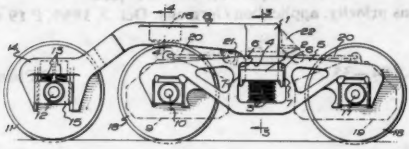


3,705,555

ARTICULATABLE RAILWAY BOGIES

Eric John Wilson; Alan Henry Briggs, and Eric Timmons, all of Sheffield, England, assignors to English Steel Corporation Limited

Filed Dec. 22, 1970, Ser. No. 100,756
Int. Cl. B61f *3/06, 5/06, 5/32*
U.S. Cl. 105—196 **6 Claims**



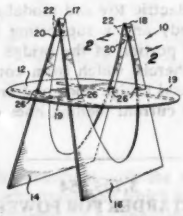
A railway bogie with a bolster has an arm extending rigidly from the middle of the bolster to a pony axle in advance of the leading axle, whereby any movement of the pony axle as its wheels move into a curve is transmitted to act on the bogie and urge it towards a position in which the bolster is aligned radially with respect to the curve, this being the position in which both the leading and trailing axles are nearest to being aligned radially with respect to the curve.

3,705,556

TABLE CONSTRUCTION

Brian Kelly, 59 Plymouth Street, No. 3, Cambridge, Mass.

Filed July 21, 1970, Ser. No. 56,895
Int. Cl. A47b *13/02*
U.S. Cl. 108—144 **12 Claims**



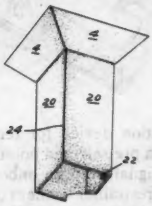
A rigid, easily assembled table having few parts, and a method for fabricating such a table, preferably from a single sheet of material, are disclosed. The table comprises a flat top member and a plurality of support members extending obliquely through the top member, said support members being secured together at their apices above the surface of the top member. An additional feature allows the top member of the table to be vertically adjusted without dissembling the component parts.

3,705,557

KNOCK-DOWN TABLE OF PAPERBOARD SHEET MATERIAL

Richard V. Budington, Somers, Conn., assignor to Longview Fiber Company

Filed Aug. 20, 1971, Ser. No. 173,432
Int. Cl. A47b *13/02*
U.S. Cl. 108—150 **9 Claims**



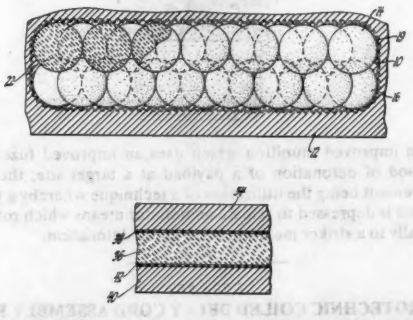
A knock-down table of stiff foldable paperboard sheet stock and the like having a single-piece platform section folded into the shape of an inverted obelisk and open at the bottom, and a single-piece pedestal section folded in tubular form and inserted into said bottom. Notched flap members foldably joined to the side panels of the platform section extend internally thereof and are slidably engaged by notched corner portions of the pedestal tube to support and releasably hold said folded shape of the platform section.

3,705,558

ARMOR

John A. McDougal, Madison Heights, and Karl Schwartzwalder, Holly, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed April 24, 1963, Ser. No. 275,402
Int. Cl. F41h *5/04*
U.S. Cl. 109—84 **8 Claims**



1. A lightweight armor plate comprising a mass of sintered hard substantially spherical ceramic balls disposed in contacting pyramidal relationship whereby each ball is in contact substantially with at least three other balls, and means for rigidly supporting said balls in said pyramidal relationship.

3,705,559

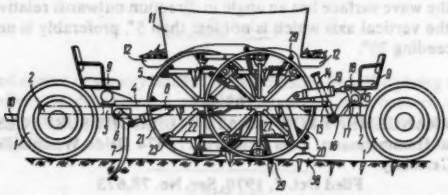
ROOT CROP PLANTER

Ivan Fedorovich Okorokov; Gorgy Porfirievich Bogdanov; Konstantin Alexandrovich Sorokin; Anatoly Fedorovich Onischenko; Pavel Efimovich Ziborov, and Samuil Nisonovich Perstnev, all of Kharkov, U.S.S.R., assignors to Ukrainsky Nauchno-Issledovatelsky Institut Selskokhozyaistvennogo Mashinostroenia Prospekt Gayarina, Kharkov, U.S.S.R.

Continuation-in-part of Ser. No. 776,166, Nov. 15, 1968, abandoned. This application May 14, 1971, Ser. No. 143,455

Int. Cl. A01c *11/00*

U.S. Cl. 111—3 3 Claims



The planter comprises planting units consisting of two support wheels longitudinally and transversely offset with respect to each other, so that one of the wheels is located aside, and displaced to the rear, of the other wheel, with regard to the direction of movement of the planter. The wheels are connected to each other by horizontal links which are hingedly secured to the wheel rims so, that the distance between the centers of the hinges along the rim equals one eighth of the length of the wheel rim circumference. The horizontal links are made with a two-step deflection, one step of which forms with the rim of the front support wheel a gap for the passage of the adjacent horizontal link, while the other step forms with the planting devices a gap for the passage of the root knockouts, as two adjacent horizontal links are located in one horizontal plane.

3,705,560

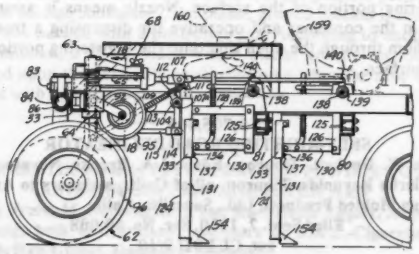
SECTIONAL ARTICULATED AGRICULTURAL APPARATUS

Douglas E. Lappin, Logan, Kans.

Continuation-in-part of Ser. No. 14,973, Feb. 27, 1970, abandoned. This application Sept. 24, 1971, Ser. No. 183,476

Int. Cl. A01c *5/00*

U.S. Cl. 111—85 17 Claims



A seed planting apparatus consisting of a first section with one or more similar sections attached thereto. Each section has furrowing means, seed dropping means and press wheels. Optionally, tanks for holding water or liquid fertilizer are mounted on each section with pipes running to the rear of each furrowing means. Each section is supported on aster wheels at its front corners and centrally of its rear edge to form a generally triangular suspension. The wheels supporting the rear of the first section can be swiveled from a position for travel in one direction to a position for travel at 90° thereto with the wheels being releasably locked in each of the two positions.

In the field, all sections in side by side relation are towed from a hitch on the first section. In transport position, all sections are towed in an end to end relationship by a hitch attached to the end of the side sections. In transport position, all of the caster wheels swivel freely except the rear set on the first section. In the field position, all of the rear wheels are releasably locked to keep them from swiveling about their caster axis while all of the forward wheels are permitted to swivel.

3,705,561

CYCLIC SEWING MACHINE

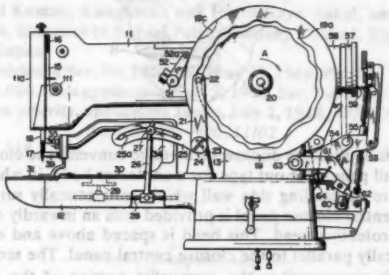
Katuaki Sakawa, Chiryu, and Tetuo Kozawa, Aichi-ken, both of Japan, assignors to Brother Kogyo Kabushiki Kaish, Nagoya-shi, Japan

Filed July 6, 1971, Ser. No. 160,195

Claims priority, application Japan, July 6, 1970, 45/58857

Int. Cl. D05b *3/04*

U.S. Cl. 112—67 8 Claims



A cyclic sewing machine comprising a first cam disk for actuating a motion control mechanism to control the start and stop of a sewing machine and a thread cutting mechanism at the end of a cycle corresponding to a prescribed number of stitches; and a second cam disk for imparting the feed movement to the work clamp mechanism with a number of stitches equal to an integral multiple of said prescribed number of stitches, wherein the motion control mechanism and thread cutting mechanism are brought to an inoperative state until just before the second pattern cam disk imparts a one cycle feed movement to the work clamp mechanism, thereby permitting the very easy change of a number of stitches used in one cycle.

3,705,562

ROTARY SHUTTLE FOR SEWING MACHINES

Susumu Hanyu, and Takashi Amano, both of Tokyo, Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed April 27, 1971, Ser. No. 137,764

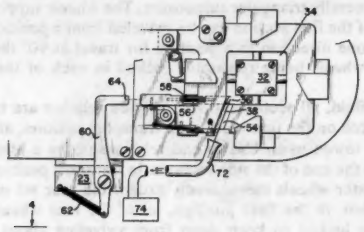
Claims priority, application Japan, April 28, 1970, 45/35952

Int. Cl. D05b *57/10*

U.S. Cl. 112—232 9 Claims

A rotary shuttle for a sewing machine is made of two plates which are press-formed to have dished wall portions and part-

circular flanges circumferentially abutting each other, and being brazed or welded together. The plates are cut out to form a recess for the passage of a sewing needle, and a hook for catching a thread.

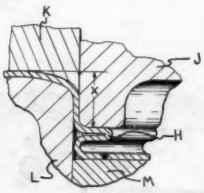


3,705,563

METHOD OF FORMING CONVENIENCE CLOSURE FOR CONTAINER BODY

William F. Elser, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Division of Ser. No. 808,022, March 17, 1969, abandoned.
This application July 21, 1970, Ser. No. 56,940
Int. Cl. B21d *51/00*
U.S. Cl. 113—121 C 1 Claim



This application discloses a metallic convenience closure of the full panel tear out type for a container body, in which the closure upstanding side wall which perimetrically surrounds the central closure panel is provided with an inwardly extending protective bead. This bead is spaced above and extends generally parallel to the closure central panel. The score line which circumscribes the removable portion of the closure panel is located entirely radially outwardly of the bead, and therefore the sharp edge which is formed along such score line when the removable portion is removed is in non-cutting relationship with the hand of a person manually emptying the contents of the associated container. The closure is provided with a removal tab, the nose of which is located in the space between the closure panel and the protective bead. The protective bead also serves to radially stiffen the associated container, and a closure with such bead may be used to particular advantage with a semi-rigid container body, e.g., a composite, laminated container body deriving its strength principally from one or more cylindrically wound fiberboard plys or laminations.

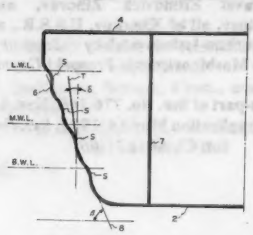
3,705,564

SHIP HULL FOR ICE-BREAKING SHIP

Jens Wilhelmsen, Fredrikstad, Norway, assignor to A/S Fredriksstad mek, Verksted, Fredrikstad, Norway

Filed Feb. 11, 1971, Ser. No. 114,611
Claims priority, application Norway, Feb. 13, 1970, 515/70
Int. Cl. B63b *35/08*
U.S. Cl. 114—41 3 Claims

A ship hull for ice-breaking ship of the kind where the opposite sides of the ship hull skin is given a particular curvature in order to increase the ability of the hull to break ice formations. The ship hull sides are given a wave-shaped curvature, such that the waves slope in direction backwards relative to the horizontal plane at an angle in the range from 0° to 25°. The ship sides are cantilevered outwards in a per se known fashion. In a preferred embodiment the steepest configuration of the wave surface has an angle in direction outwards relative to the vertical axis which is not less than 5°, preferably is not exceeding 20°.

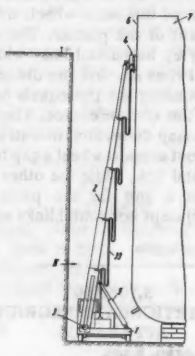


3,705,565

ARRANGEMENT FOR TREATING UPRIGHT SURFACES

Paul Hammelmann, Zum Sundern 17, 474 Oelde-Westphalia, Germany

Filed Oct. 7, 1970, Ser. No. 78,673
Claims priority, application Germany, Oct. 10, 1969, P 19 51 107.0
Int. Cl. B60s *3/02*
U.S. Cl. 114—222 15 Claims



A vehicle is movable along the upright outer surface of a ship's wall in a horizontal path. A mast on the vehicle extends upwardly along the surface and has an upper end portion, the mast being extensible and retractable. An evacuable container is provided on the upper end portion of the mast displaceable at least with reference to and along the surface and having an open side facing and adapted for fluid-tight contact with a registering portion of the surface. Nozzle means is arranged within the container and operative for dispensing a treating medium through the open side onto the registering portion of the surface.

3,705,566

SELF-RIGHTING ROAD DELINEATOR

John W. Duckett, Tiburon; Edward A. Brooks, Novato, and Clarke Reynolds, Tiburon, all of Calif., assignors to American Molded Products, Ltd., Sausalito, Calif.

Filed Sept. 2, 1970, Ser. No. 69,008
Int. Cl. E01f *9/10*
U.S. Cl. 116—63 P 18 Claims

A road delineator or marker comprises a vertically disposed delineating member, such as a post or cone, attached to a horizontally disposed elastomeric base. The delineator is constructed to have a very low center of gravity and to permit a substantial portion of the base to remain in contact with the

ground to constantly maintain the delineator's pivot axis and center of gravity substantially within the confines of the base. In addition to such positioning of the delineator's pivot axis

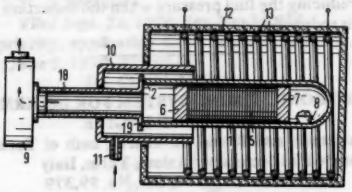
and center of gravity, means for automatically self-righting the delineator comprises a suitably composed and constructed base which exhibits predetermined degrees of elasticity and flexibility.

3,705,567

DEVICE FOR INDIFFUSSING DOPANTS INTO SEMICONDUCTOR WAFERS

Reimer Emels, Ebermannstadt, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Jan. 22, 1971, Ser. No. 108,700
Claims priority, application Germany, July 6, 1970, P 23 33 44.5
Int. Cl. C23c *13/12*
U.S. Cl. 118—49 **7 Claims**



A silicon ampule is provided at its open end with a planar ground section, to which is pressed with the aid of a vacuum pump, a quartz tube provided with a planar ground section. Porosity caused through various thermal expansion coefficients, or thermal stresses does not occur, therefor. The silicon tube is carried only by the quartz tube and does not contact with any other material. To prevent the possible penetration of foreign substances, the planar ground section is rinsed from the outside with a protective gas. According to another embodiment, a lid provided with a planar ground section is placed upon the vertically positioned tube, after the tube was rinsed with protective gas.

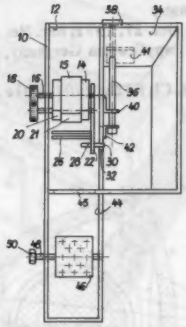
3,705,568

APPARATUS FOR APPLYING BRONZE POWDER TO A CONTINUOUSLY MOVING PAPER WEB

Heinz Freiwald, Bunningstedt, and Karl-Heniz Eggert, Ahrensburg, both of Germany, assignors to B.A.T.-Cigaretten-Fabriken GmbH, Hamburg, Germany

Filed April 14, 1970, Ser. No. 28,435
Int. Cl. B05c *1/08, 11/02*
U.S. Cl. 118—57 **3 Claims**

For applying bronze powder to parts of a continuously moving paper strip particularly a cigarette paper strip, which are provided with an imprint in adhesive, a roller with a novel surface is utilized, a second roller with a specially formed surface



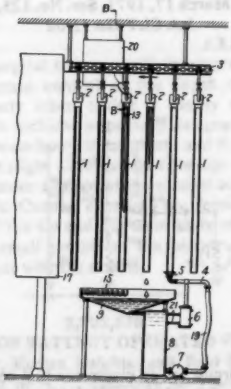
being used thereafter as a means for removing surplus bronze powder from the paper strip.

3,705,569

APPARATUS FOR PAINTING THE INNER SURFACE OF PIPES

Kimiaki Kasano, Amagasaki, and Ichiro Kaya, Sakai, both of Japan, assignors to Kansai Paint Company Limited, Hyogo-ken, Japan

Division of Ser. No. 835,705, June 23, 1969, Pat. No. 3,657,000. This application Nov. 3, 1971, Ser. No. 195,510
Claims priority, application Japan, July 2, 1968, 43/46399
Int. Cl. B05c *7/00, 11/02*
U.S. Cl. 118—105 **1 Claim**

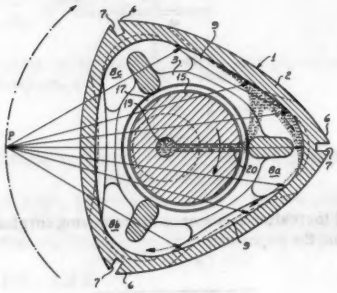


A method and apparatus for interior painting of a pipe, particularly of small diameter, is characterized by filling of a pipe with both ends open with paint, hanging the pipe vertical and passing a ball of a diameter smaller than the inside diameter of the pipe from the upper end of the pipe to fall down by its gravity through the pipe and strip off excessive paint so as to form a film of uniform thickness of paint of the inner surface of the pipe.

3,705,570
ROTARY COMBUSTION ENGINE WITH LIQUID-COOLED ROTOR

Max Ruf, Obereisesheim, Germany, assignor to Audi NSU Auto Union Aktiengesellschaft und Wankel GmbH Lindau, Bodensee, Germany

Filed Oct. 27, 1971, Ser. No. 193,115
Claims priority, application Germany, Nov. 23, 1970, P 20 57 479.2
Int. Cl. F02b 55/04; F01c 21/06
U.S. Cl. 123—8.45 4 Claims

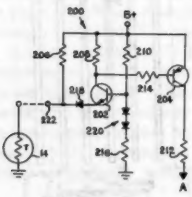


An internal rotary combustion engine of the trochoidal type, in which centrifugal forces in the shaft and rotor are utilized to pump and channel lubricating and cooling oil through a hollow rotor, and in which the internal cavity of the rotor is shaped and contoured to assist in pumping and to govern the direction of throughput.

3,705,571
HOT START AUXILIARY CIRCUIT FOR ELECTRONIC FUEL CONTROL SYSTEM

John W. Horn, and Todd L. Rachel, both of Elmira, N.Y., assignors to The Bendix Corporation

Filed March 17, 1971, Ser. No. 125,097
Int. Cl. F02n 11/08
U.S. Cl. 123—32 EA 11 Claims

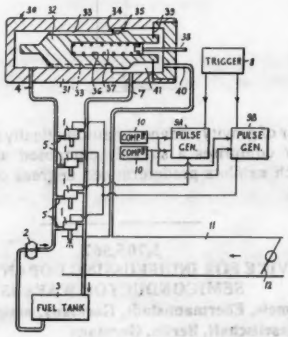


An auxiliary circuit for an electronic fuel control system to facilitate hot starting of the associated engine is disclosed herein. The circuit is responsive to engine temperature above a selected level and is operative to lengthen fuel injection control pulses by an amount calculated by the circuitry to be necessary to purge the injectors and the fuel supply conduits of any vapors forming as a result of excessive engine compartment temperatures. The circuit comprises a first means to generate a signal indicative of the temperature condition and a second means to translate this signal into an appropriate voltage for application to the main computing portion of the electronic fuel control system.

3,705,572
FUEL INJECTION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

George Vincent Bloomfield, Coventry, England, assignor to Brico Engineering Limited, Warwickshire, England

Division of Ser. No. 811,914, April 1, 1969, Pat. No. 3,596,640. This application Nov. 10, 1970, Ser. No. 88,416
Claims priority, application Great Britain, April 5, 1968, 16,641/68
Int. Cl. F02m 51/00
U.S. Cl. 123—139 AW 6 Claims

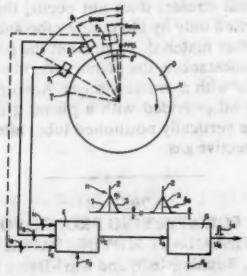


Fuel from a fuel pressure source is injected by fuel injection valves into the induction passage of an engine and means are provided to vary the pressure of the fuel pressure source in accordance with the engine induction passage pressure, in the sense of reducing the fuel pressure when the induction passage pressure is reduced and vice versa.

3,705,573
ELECTRONIC TIMING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Mario Palazzetti, and Bruno Cavallarin, both of Turin, Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Filed Dec. 18, 1970, Ser. No. 99,379
Claims priority, application Italy, Dec. 31, 1969, 54585 A/69
Int. Cl. F02p 5/04, 5/08
U.S. Cl. 123—146.5 A 7 Claims



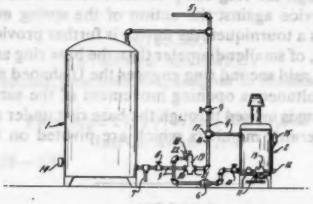
An electronic timing system for an internal combustion engine provides an angle of advance which increases linearly with the engine speed up to a maximum angle of advance, at which it remains despite any increase in engine speed.

3,705,574

WATER HEATING AND STORAGE SYSTEM WITH MIXING VALVE

Angelo N. Duncan, Bourbonnais, Ill., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed July 9, 1971, Ser. No. 161,084
Int. Cl. F24d *3/02*
U.S. Cl. 126—362 4 Claims



The invention relates to a water heating system in which a single water heater is utilized in combination with a storage tank and pump to provide hot water for various uses. The invention is particularly directed to the use of a thermostatic mixing valve set at a predetermined temperature and located at a juncture between a recirculating conduit from the water heater and the conduit for the flow of water from the storage tank or a source of fresh water supply to the water heater so that water which has already been heated by the water heater may be mixed with the colder water supplied to the water heater to be heated.

3,705,575

INCONTINENCE DEVICE FOR FEMALE USE

Lynn Euryl Edwards, 18, Quadrant Grove, Kentish Town, London N.W. 5, England

Filed Sept. 22, 1970, Ser. No. 74,350
Claims priority, application Great Britain, Sept. 26, 1969, 47,541/69; June 5, 1970, 27,195/70
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R 7 Claims

An incontinence device for female use comprises a member adapted to apply pressure to the urethra, preferably from inside the vagina, so as to prevent the flow of urine therefrom. The device may include means for stimulating the muscle action of the tissue controlling the urethra so as to improve the natural urine retention of the wearer of the device.

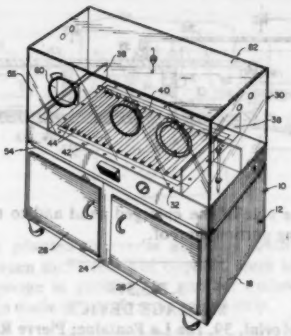
3,705,576

INCUBATORS FOR INFANTS

Wilfred Roth, Burlington, Vt., assignor to Research Corporation, New York, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,571
Int. Cl. A61m *16/02*; A61n *5/01*
U.S. Cl. 128—1 B 10 Claims

An incubator has a reflecting plastic sheet overlying the transparent plastic dome of an infant sheltering chamber which has a clear plastic bottom that defines a partition wall for an underneath irradiation chamber that is environmentally isolated from the rest of the incubator and in which a bank of fluorescent lamps is operatively disposed so as to irradiate the infant sheltering chamber from below with the irradiation chamber being continually flushed with fresh air to dissipate heat from the lamps and eliminate explosion hazards.

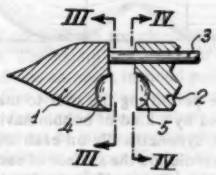


3,705,577

BIOPSY NEEDLE WITH ECCENTRICALLY-MOUNTED CUTTING TIP

Rafael B. Sierra, P.O. Box 3084, Lantana, Fla.

Filed Dec. 22, 1969, Ser. No. 886,853
Claims priority, application Spain, Oct. 2, 1969, 152231
Int. Cl. A61b *10/00*, *17/32*
U.S. Cl. 128—2 B 8 Claims



An improved surgical biopsy needle is adapted to facilitate precise and accurate control of the depth of penetration thereof, particularly when taking a biopsy of a patient's pleura. The needle includes a specially designed tip, movable in relation to the main body of the pleura and then twisted to a position such that slight withdrawal of the tip will cause it to bear against the inner surface of the pleural to locate the tip against the pleura. Cutting elements are formed on the adjacent surfaces of the tip and the main body of the needle to thereafter cut a small sample of the pleura and enable its withdrawal together with the needle.

3,705,578

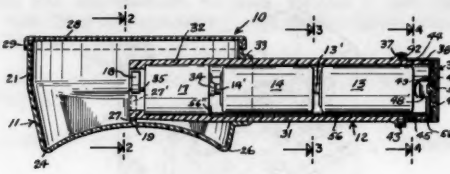
WATERPROOF BATTERY OPERATED VIBRATOR

Lester M. Cutler, Roslyn Heights, and Paul Friedman, Old Westbury, both of N.Y., assignors to Vibra-Baths Home Products, Inc.

Filed July 15, 1971, Ser. No. 162,976
Int. Cl. A61h *1/00*
U.S. Cl. 128—36 7 Claims

A vibrator having an enlarged hollow head and a handle extended through an opening into the enlarged head for engagement with an extension extending inwardly from one of the vibrating surface portions so as to impart vibratory movement thereto. The handle contains batteries, electric motor and an eccentric fly weight that will overly the inward extension of the body engaging portion and the handle sleeve extends

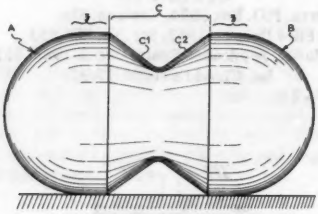
between a flanged opening in the side wall of the enlarged head and the extension so that vibratory movement will be imparted to the side of the enlarged head and to the opposite body engaging portion thereof.



3,705,579
MASSAGE DEVICE

Jean-Louis Morini, 39, rue La Fontaine; Pierre Rigal, 91, rue Taitbout, and Jean Leduc, 7, rue Daguere, all of Seine, France

Filed March 2, 1971, Ser. No. 120,216
Claims priority, application France, March 10, 1970, 7008598
Int. Cl. A61h *15/00*
U.S. Cl. 128—57 **4 Claims**

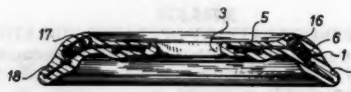


A massage device permitting the user to massage his own back; it is constituted by a kind of bobbin having a narrowed central portion and, symmetrically on each side of said portion, two bodies of revolution the surface of each of which is a quadric, the application of the self-massaging device being effected by the user himself who interposes it between his back and a flat surface, the user moving his back parallel to the flat surface in such manner as to cause the device to roll on itself while being maintained against the said surface.

3,705,580
DEVICE FOR MEDICAL USE

Oscar Gauthier, 7560 Milan Blvd., Ville de Brossard, Quebec, Canada

Filed July 19, 1971, Ser. No. 163,780
Int. Cl. A61f *5/00*
U.S. Cl. 128—79 **10 Claims**

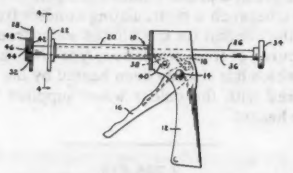


A device operating as a tourniquet for assisting erection of the penis and used as a contraceptive by stopping semen discharge. The device can also be modified to be used as an artificial anus. The device comprises an armature made of steel wire and a covering for said armature preferably made of sponge rubber. The armature comprises a base ring to which are pivotally connected a plurality of U-shaped members disposed side by side, overlapping and pivotable between closed and open position. In the closed position, the U-shaped members radially inwardly extend from the base ring substantially in the plane of the latter. In the open position, the U-shaped members form a tube-like member on one side of the ring. Spring means consisting of V-shaped resilient wires are each connected with a pair of adjacent U-shaped members and urge the same towards each other, so as to urge the U-shaped members into closed position. When used as an artificial anus, the sponge rubber covering completely closes the opening through the ring but pressure exerted from one side opens the device against the action of the spring members. When used as a tourniquet, the device is further provided with a second ring, of smaller diameter than the base ring and coaxial therewith; said second ring engages the U-shaped members to cause simultaneous opening movement of the same when the second ring is moved through the base ring under action of lever-like operator members which are pivoted on the base ring.

3,705,581
CAST SPREADING DEVICE

Leon A. Drake, 3220 Old Hobart Road, Lake County, Ind.

Filed Dec. 17, 1970, Ser. No. 98,980
Int. Cl. A61f *5/04*
U.S. Cl. 128—83 **6 Claims**

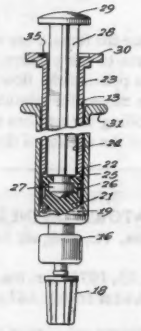


A cast spreading device for spreading the severed wall of a cast comprising a handle having a finger pivoted lever which actuates a longitudinally movable shaft through a barrel. The distal end of the barrel has fixed thereon a bit. The distal end of the shaft passing through the barrel carries a second bit which operates to move away from the bit on the barrel as the shaft is advanced through the barrel. This operation functions to spread the cast apart when the bits are embedded in the cut of the cast.

3,705,582
BREECH LOADED SYRINGE AND METHOD OF BREECH LOADING SAME

Marvin D. Stumpf, 9301 Clarion Drive, St. Louis, Mo., and Elmer A. Koenig, 1702 Ben Davis Lane, Kirkwood, Mo.

Filed Sept. 23, 1969, Ser. No. 860,223
Int. Cl. A61m *5/00*
U.S. Cl. 128—218 P **8 Claims**



A syringe wherein a piston is moved axially through a tubular barrel to deliver liquid medicament and the like outwardly

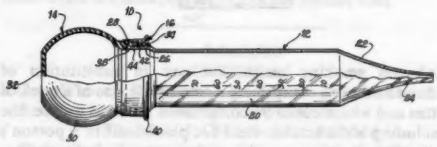
through a needle connected through an inner end of the barrel. A control is provided for selectively deforming the piston to permit the barrel to be preloaded with the liquid medicament through the breech end thereof with the piston being brought into engagement with the liquid while a fluid bypass passage is provided around the piston to the breech end of the barrel, thereby to vent air outwardly from the space between the piston and the liquid medicament during the insertion of the piston.

3,705,583

SYRINGE ASSEMBLY

Hans J. Rentsch, Deerfield, Ill., assignor to Medline Industries, Inc.

Filed Sept. 17, 1970, Ser. No. 73,006
Int. Cl. A61m *1/00*
U.S. Cl. 128—232 **1 Claim**



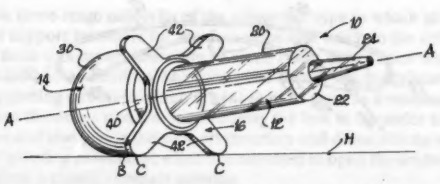
A syringe assembly including a barrel and an externally mounted squeeze bulb. The squeeze bulb provides a mounting sleeve surrounding the barrel adjacent the wide mouthed end of the barrel. A lock ring compressively biases the mounting sleeve into sealing engagement with the barrel to resist withdrawal of the bulb from the barrel.

3,705,584

STABILIZED SYRINGE ASSEMBLY

Leonard T. Fript, Evanston, Ill., assignor to Medline Industries, Inc.

Filed Sept. 17, 1970, Ser. No. 73,007
Int. Cl. A61m *1/00*
U.S. Cl. 128—232 **8 Claims**



A stabilized squeeze bulb syringe assembly including a plurality of stabilizing arms projecting outwardly from the assembly to provide, with the bulb, a tripoint support for the assembly on a horizontal surface. The nozzle of the syringe barrel is thereby maintained in an upwardly inclined direction. The stabilizing arms serve also as finger grips to assist in squeezing the bulb when the contents of the syringe assembly are to be discharged.

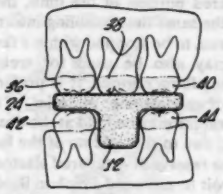
3,705,585

PREFORMED SURGICAL SPONGE

Dennis W. Saffro, 10158 Hollow Glen Circle, Los Angeles, Calif.

Continuation-in-part of Ser. No. 874,448, Nov. 6, 1969, abandoned. This application July 15, 1971, Ser. No. 162,927
Int. Cl. A61f *7/12, 13/00*; A61b *17/12*
U.S. Cl. 128—303.1 **12 Claims**

A preformed surgical sponge particularly for use after oral surgery involving extraction of a tooth is preformed to specifically fit over and around the gum area containing a cavity from which a tooth has been extracted. The sponge body is formed with a tapering trough that receives and compresses the gum. A pair of longitudinally extending flange portions on



the body are adapted to overlie adjoining teeth and to be clamped between such teeth and opposed teeth to retain the preformed sponge in position. In another embodiment the sponge body is made of a preformed folded strip.

3,705,586

UMBILICAL CORD CLAMP

John B. Sarracino, 4309 Forest wood Drive, San Jose, Calif.

Filed March 4, 1971, Ser. No. 120,948
Int. Cl. A61b *17/08*
U.S. Cl. 128—346 **12 Claims**

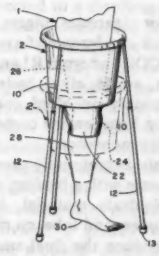
An umbilical cord clamp for closing the cord stump on a newborn infant. The clamp has a pair of opposing clamping members biased into an open, inclined position by a spring interconnecting first ends of the members and is closed by locking second, free ends of the members together. The members define a first set of interengaging channels and coacting protrusions which are perpendicular to the stump and a second set of coacting channels and protrusions which are transverse to the first set. Sections of the cord are biased into the first and second channels to thereby fold the cord in transverse directions and prevent the clamp from slipping along or transversely to the cord stump.

3,705,587

CRYMOTHERAPY APPARATUS FOR LIMBS

Billy A. Page, 1304 Grant Street, Wichita Falls, Tex.

Filed Dec. 22, 1970, Ser. No. 100,667
Int. Cl. A61f *7/00*
U.S. Cl. 128—402 **11 Claims**



A reservoir for receiving a liquid or liquid and ice to enable the mixture in the reservoir to be maintained at a desired tem-

perature, as low as 32°F. or 0°C., to enable a limb, such as a foot, the mid-calf, knee, the lower thigh or the upper thigh of the leg to be treated with localized therapy by application of a liquid or liquid and ice of the desired temperature being applied to the injured portion of the limb, thereby preventing frostbite and at the same time enabling internal hemorrhaging of the affected area, to be stopped within a few minutes.

The device may also be used for treatment of hands, forearms and the elbow regions. It is preferable to have the reservoir made of an elastomer material, of sufficient capacity, so the temperature may be held at the desired degree, over a period of time, due to the volume of the liquid or the liquid and ice within the reservoir. A tapered elastomer neck extends below the reservoir to surround a limb in fluid tight relation, to prevent the escape of liquid. The elasticity of this neck is such that it will stretch and fit certain portions of the limbs in liquid tight relation without causing the "cording" of the limb that would deter blood circulation. The treatment device is mounted on an adjustable tripod to enable it to be used at any desired height. The device is frustro-conical in shape and several may be stored in telescoped relation.

3,705,588

CHEMICALLY MODIFIED FILM COVERING FOR APERTURED SMOKING PRODUCT WRAPPER

Ronald A. Tamol, and Leo F. Meyer, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed July 6, 1971, Ser. No. 160,059

Int. Cl. A24d *1/02*; D21h *5/16*

U.S. Cl. 131—15 B **5 Claims**

The disclosure relates to a film covering for a smoking product wrapper, such as a cigarette wrapper. The wrapper is either porous, or is deliberately perforated with vents or apertures. These openings or vents are covered with a polymeric film made of a polyalkalene oxide, polyvinyl alcohol or copolymer thereof containing butadiene or isoprene units as well as natural gums and resins that has been submitted to a degradation operation. The degradation is chemically produced utilizing an oxidizer/free-radical generator. The degradation facilitates and expedites the removal of film over the apertures by smoke components so that air is permitted to dilute the smoke during the later stages of smoking.

3,705,589

TOBACCO SUBSTITUTE SMOKING MIXTURE

James Forrester Morman, Troon, Scotland, assignor to Imperial Chemical Industries Limited, London, England

Filed April 22, 1970, Ser. No. 31,014

Claims priority, application Great Britain, May 1, 1969, 22,270/69

Int. Cl. A24b *15/00*; A24d *01/18*; A24b *13/00*

U.S. Cl. 131—17 **9 Claims**

Smoking mixture for cigarettes, cigars, pipes and the like comprising a solid black condensate of a compound of the formula $R^1 COCH_2 \cdot CH_2 COR^2$ wherein R^1 and R^2, which may be the same or different, are H, alkyl, hydroxyalkyl or formyl. The condensate is mainly an aldol condensation product resulting from reaction between the carbonyl groups and the methylene groups of the monomer.

The solid condensate is preferably prepared in sheet form by mixing the condensate with a binding agent. Suitable additives such as carbohydrate material, inert porous fillers, flavorants, glow producers and tobacco may be admixed with the condensate to produce the final smoking product. The preferred condensates are succinaldehyde, acetonyl acetone and compounds of the formula $H \cdot CO \cdot CH_2 CO \cdot CO \cdot H, H \cdot CO \cdot CH_2 CH_2 CO \cdot CH_2 OH$ and $H \cdot CO \cdot CO \cdot CH_2 CH_2 CO \cdot CH_2 OH$.

3,705,590

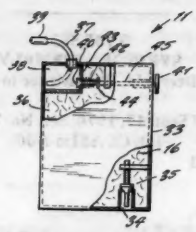
COMPRESSED CIGARETTE SMOKE

John W. Rains, Star Route Morrow Acres, Guntersville, Ala.

Filed Dec. 23, 1970, Ser. No. 101,017

Int. Cl. A24f *47/00*

U.S. Cl. 131—170 A **1 Claim**



A tobacco smoking means for use in substitution of cigarettes, the device comprising a case of the size of a pack of cigarettes and which contains compressed tobacco smoke, the case including a retractable stem for placement in a person's mouth for drawing in the smoke, and the case including a one-way valve to permit recharging the case with fresh smoke after the smoke has become used up, and the present invention including an apparatus for manufacturing the compressed tobacco smoke.

3,705,591

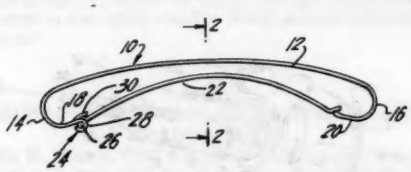
HINGED BARRETTES

Murray Jennis, Laurelton, N.Y., assignor to H. Goodman & Sons, Inc., Kearny, N.J.

Filed June 4, 1971, Ser. No. 150,038

Int. Cl. A45d *8/24*

U.S. Cl. 132—48 R **7 Claims**



A barrette includes a main member and a tongue having one of its ends hinged to the main member and its opposite end latched. A stationary tab extension of a hinge part of the main member obstructs movement of the tongue into its latched position. The tab and the resilience of the parts develop spring bias that presses the latch end of the tongue against a latch part of the main member when the tongue is latched, and swings the tongue away from the main member when the tongue is unlatched.

3,705,592

UMBRELLA HANDLE

Heinz Weber, Rheinland, Germany, assignor to Telesco Brophey Limited, East Montreal, Quebec, Canada

Filed Jan. 25, 1971, Ser. No. 109,160

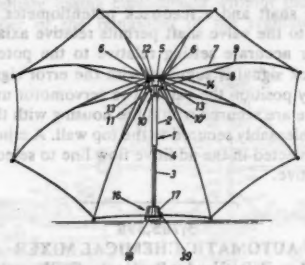
Claims priority, application Germany, Jan. 24, 1970, P 20 03 178.1

Int. Cl. A45b *9/02*, *25/00*

U.S. Cl. 135—20 R **5 Claims**

An umbrella handle having a cap portion in which is

mounted a plurality of pins adapted to enter slits provided in the body portion of the handle. A central stud is provided

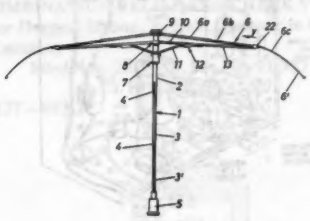


which enters the end of the handle stick and a transverse pin transverses the stick, the body and the handle stud.

3,705,593
UMBRELLA

Heinz Weber, Rhineland, Germany, assignor to Telesco Brophey Limited, East Montreal, Canada

Filed Feb. 5, 1971, Ser. No. 112,916
Claims priority, application Germany, Feb. 5, 1970, P 20 05 149.4
Int. Cl. A45b *19/08*
U.S. Cl. 135—20 **2 Claims**



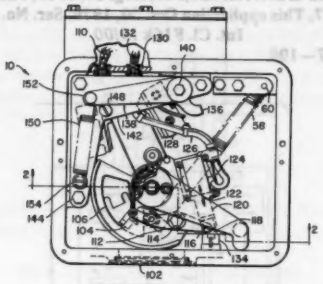
A three-stage umbrella of the telescopic type in which all of the support members for the dome ribs nest one into the other to form a compact umbrella of small outer dimensions when folded and an auxiliary link forms one side of the quadrilateral supporting structure which is bent so as to provide a resilience when the dome ribs are open causing the link to be under tension and also giving the support structure and dome ribs an initial pivoting movement when it is required to open the umbrella from a closed compact position.

3,705,594
SAFETY SHUTOFF VALVE STRUCTURE AND METHOD

Donald D. Placek, University Heights, Ohio, assignor to The North American Manufacturing Company, Cleveland, Ohio

Filed July 1, 1971, Ser. No. 158,720
Int. Cl. F16k *31/44*
U.S. Cl. 137—1 **10 Claims**

Safety shutoff valve structure and method, wherein the valve is a ball valve sealed by an annular flexible seal urged into engagement with the valve by a garter spring whereby on opening the valve substantially no pressure drop is developed across the valve, and wherein a compression spring is provided for urging the valve stem in one direction to close the valve, a lever and detent means therefor are connected to the valve stem by a solenoid actuated spring clutch responsive to a predetermined condition whereby on rotating the valve stem to place the valve in an open position, the valve is maintained in the open position until occurrence of the predetermined condition. The spring clutch is operated with a uniform force not dependent on the valve opening torque or compression spring strength and the spring clutch is engaged with a force

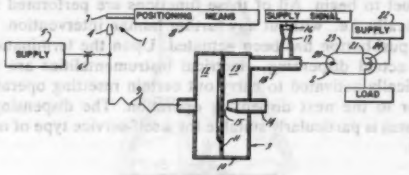


greater than the actuating force on moving the valve to an open position.

3,705,595
FLUIDIC AMPLIFIER OR MODULATOR WITH HIGH IMPEDANCE SIGNAL SOURCE MEANS

Richard N. Laakaniemi, Milwaukee; Frank A. Kuczkowki, Glendale; Louis D. Atkinson, New Berlin; Paul W. Kuhar, Milwaukee; Thomas J. Lechner, Jr., Brookfield, and Urban A. Weber, Menomonee Falls, all of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 25, 1971, Ser. No. 109,435
Int. Cl. F15c *1/20, 3/04*
U.S. Cl. 137—81.5 **22 Claims**

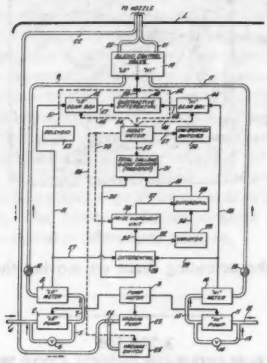


A fluid repeater connects a high impedance sensor to the nozzle of a fluidic modulator such that the nozzle is coupled to the respectively low output impedance of the repeater instead of the high sensor output impedance. The repeater is of the leak type or a fluidic cathode follower shown in U.S. Pat. No. 3,499,458. A fluid controller includes a plurality of high impedance signal sources and lines individually connected through repeaters to an impact summing modulator as a summing point connected to a diaphragm amplifier. The output of the repeaters can be connected directly to the opposed summing signal nozzles of an impact modulator, to a transverse deflection control nozzle; singly or in combination with a non-deflecting opposing modulating difference signal. A feedback restrictor connects the output of the diaphragm amplifier to the modulator. The repeaters in the circuit essentially eliminate all loading and attenuating of the high impedance sensors and permit a substantial simplification in the fluidic circuitry. Suitable "Ratio" and calibrating restrictors connect a regulated pressure supplying to the summing impact modulator. This provides a greatly improved controlling receiver of simplified, modular construction. An integrator may be readily formed by connecting a capacitor, coupling resistor and positive feedback restrictor to the input side of the controlling receiver.

3,705,596
MOTOR FUEL DISPENSING APPARATUS

Einar T. Young, Newtown, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Division of Ser. No. 850,901, Aug. 18, 1969, Pat. No. 3,587,337. This application Oct. 30, 1970, Ser. No. 85,612
Int. Cl. F16k *19/00*
U.S. Cl. 137—100 **4 Claims**

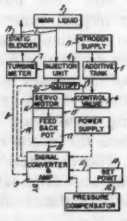


An apparatus for dispensing a selected grade of motor fuel (each grade having a different octane rating) has an array of operating pushbuttons a selected one of which may be actuated (the selection being made according to the grade of fuel desired) to start the dispensing operation. Upon the actuation of a pushbutton, certain instrumentalities in the apparatus are energized or released to (among other things) select gearing in the apparatus appropriate to the grade selected, reset the counter or register to zero, set a control valve to a predetermined position, and start up the pump to cause the dispensing of fuel to begin. All of these functions are performed automatically, i.e., without any further human intervention, once the pushbutton has been actuated. Upon the termination of the actual dispensing, electrical instrumentalities are automatically activated to carry out certain resetting operations, prior to the next dispensing operation. The dispensing apparatus is particularly suitable for a self-service type of operation.

3,705,597
CONTINUOUS CONTROL FOR INTRODUCING MATERIAL INTO A FLOWING LIQUID

Ronald O. Krause, Waukesha, and Peter D. Bayne, Shorewood, both of Wis., assignors to Nutrico, Inc., Milwaukee, Wis.

Filed Feb. 26, 1971, Ser. No. 119,087
Int. Cl. F16k *19/00*
U.S. Cl. 137—101.21 **10 Claims**

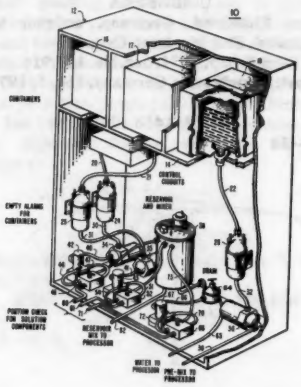


A turbine meter is supported within a housing and produces signal pulses proportional to flow. An injector valve to the input side of the meter is connected to a pressurized additive tank through a linear valve. The valve includes a tapered shaft axially positioned in a flow orifice. A converter converts the pulses to an analog signal. A set point generator establishes a scaled signal which is connected with a line pressure compensating signal and the analog signal to an amplifier to produce an analog error signal driving a servomotor to position the linear valve shaft and a feedback potentiometer. A slotted connection to the valve shaft permits relative axial shaft adjustment for accurate setting relative to the potentiometer. The feedback signal is summed with the error signal to correspondingly position the valve. The servomotor unit and the control valve are secured within the housing with the additive tank to be releasably secured to the top wall. A minimum flow valve is connected in the additive flow line to selectively stop flow of additive.

3,705,598
AUTOMATIC CHEMICAL MIXER

Manuel C. Ray, Palos Verdes Peninsula, Calif., assignor to National Research and Chemical Company

Filed Dec. 4, 1970, Ser. No. 95,108
Int. Cl. F16k *19/00*
U.S. Cl. 137—101.25 **7 Claims**



A demand responsive system for automatically mixing and replenishing liquid chemicals subject to degradation when mixed, including collapsible storage vessels for the unmixed chemicals, a small reservoir for storing and mixing chemicals, pump means to transfer chemicals from the separate storage vessels to the reservoir at rates higher than the demand rates, valve means within the reservoir for maintaining the reservoir level within selected limits, and means for connecting the reservoir with a chemical user. For photographic film processors, for example, the system functions on demand to periodically replenish a mixture of A and B type working solutions, while also supplying fixer and water if desired. This system supplies adequate amounts of the mixture on demand with a minimum of deterioration by premixing only an amount which may be needed for immediate use. The system is completely automatic and needs no operator control.

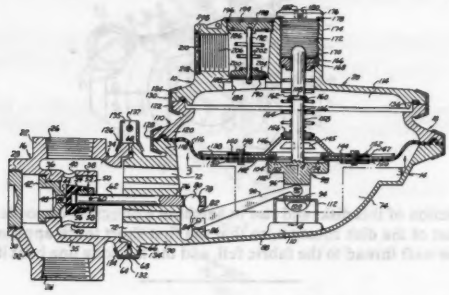
3,705,599
UNIVERSALLY-MOUNTABLE GAS SERVICE REGULATOR

Marvin L. Sheward, R.R. No. 1, Frankton, Ind.

Continuation-in-part of Ser. No. 762,199, Sept. 16, 1968, abandoned. This application July 29, 1970, Ser. No. 59,106
Int. Cl. G05d *11/00*; F16k *31/12*
U.S. Cl. 137—116.5 **1 Claim**

This gas service regulator is mountable to place the vent in any desired position by providing a multi-component casing and by making the upper and intermediate components of the casing adjustably rotatable relatively to one another and to the lower casing component by means of split channel clamping

rings of wedge-shaped cross-section which also eliminate the need for the bolt holes and bolts customarily used. The internal relief valve mechanism can be removed from the upper and intermediate casing components without disassembling the remainder of the remainder of the regulator. A stop



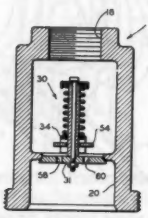
bracket limits the range of motion of the lower diaphragm plate. The external breather valve disc contains a vent hole. The regulator valve member is made in two parts which are yieldably held together by being permanently magnetized so as to enable their separation and withdrawal through an access opening normally closed by a threaded plug.

3,705,600

COMBINATION RELIEF AND CHECK VALVE

John Peter Heggen, Lisbon, N. Dak., assignor to Clark Equipment Company

Filed Nov. 23, 1970, Ser. No. 91,737
Int. Cl. F16k *17/26, 45/00*
U.S. Cl. 137—493.2 **4 Claims**



A valve having a valve body with a bore disposed therethrough providing a valve chamber in communication with an inlet passage and an outlet passage. A valve element having a valve head and attached valve stem is axially reciprocable within the bore and is spring biased toward a closed position to restrict the flow of fluid through the valve in one direction until a selected positive pressure differential is exerted across the valve. The valve head has at least one opening therethrough and a valve plate is movable along the stem between a position adjacent the head and covering the opening therein and a position apart from the head to thereby permit the flow of fluid through the opening when a negative pressure differential is exerted across the valve.

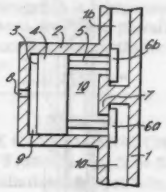
3,705,601

VALVE ARRANGEMENT FOR SUCTION TUBES

Kjell Oystein Arisland, Vekterveien 41, Oslo, 6, Norway

Filed April 6, 1971, Ser. No. 131,794
Claims priority, application Norway, April 6, 1970, 1254/70
Int. Cl. F16k *17/26*
U.S. Cl. 137—493 **7 Claims**

Valve arrangements for suction tubes, characterized by at least two pistons which are mutually mechanically connected and so designed that the one piston always is subject to pressure variations in the one end of the suction tube and the other piston always is subject to pressure variations in the other end



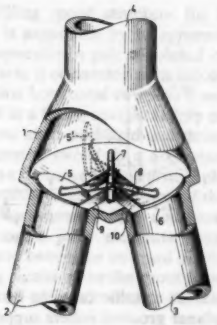
of the suction tube. An underpressure in either one of the tube parts results in the effective piston surface which is exposed to the underpressure causing the valve to open.

3,705,602

SPRING BIASED CHECK VALVE FOR PIPE BRANCHES

Lars-Erik Reinhold Nordin, Taby, and Lars William Anshelm Mollerfors, Sundbyberg, both of Sweden, assignors to Stenberg-Flygt AB, Solna, Sweden

Filed Dec. 31, 1969, Ser. No. 889,496
Claims priority, application Sweden, Jan. 10, 1969, 319/69
Int. Cl. F16k *15/03*
U.S. Cl. 137—512 **6 Claims**



Non-return valve for positioning in a pipe socket and having a flap member rotatable around a shaft. The shaft is arranged in a plane at a given distance from the plane of the flap, whereby the flap in an open position is passed circumfluently by the medium flowing through the valve.

3,705,603

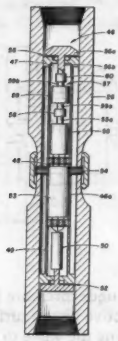
DRIVE TRAIN FOR LOGGING-WHILE-DRILLING TOOL

Daniel E. Hawk, Duncanville, Tex., assignor to Mobil Oil Corporation, New York City, N.Y.

Filed June 16, 1971, Ser. No. 153,653
Int. Cl. F16k *31/44*; G01v *1/40*
U.S. Cl. 137—624.14 **7 Claims**

An improved drive train for coupling a motor to a signal generating, rotary type valve in a logging-while-drilling tool. The drive train includes a double planetary, speed reducing transmission, the input shaft of which is coupled to the motor by an automatically releasable clutch to prevent damage in the

event the valve becomes jammed. The output shaft of the transmission is coupled to the rotor of the valve by means of a



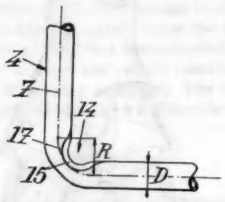
flexible coupling which reduces the reversing peak torque loads created by operation of the valve.

3,705,604

DEVICE FOR BENDING METALLIC TUBES AND IN BENT METALLIC TUBES

Georges Christin, Marnes La Coquette, France, assignor to Etablissements Bertrand Faure, Puteaux, France

Filed Feb. 11, 1970, Ser. No. 10,395
Claims priority, application France, Feb. 11, 1969, 6903189
Int. Cl. F15d *1/02*
U.S. Cl. 138—178 5 Claims



The device enables metallic tubes to be bent round acute curves. Two coplanar grooved rollers support the tube and a tool is forced downward on the intermediate section of the tube, so bending the tube and deforming its cross-section. The active surface of the tool has a median groove and two ribs bounding the groove, extending longitudinally of the tube. The bent tube thus has a concave portion including a median rib and two longitudinal shoulders.

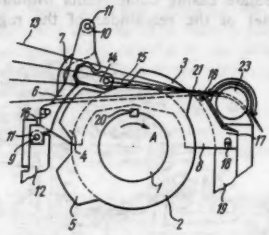
3,705,605

FABRIC FORMING DEVICE FOR WEAVING LOOMS

Dmitry Vladimirovich Titov, Moscow, U.S.S.R., assignor to Vsesojuzny Nauchno-Issledovatelsky Institut Textilnogo Legkogo Maskinostroenia, Moscow, U.S.S.R.

Filed Dec. 15, 1970, Ser. No. 98,299
Int. Cl. D03d *47/26, 49/60*
U.S. Cl. 139—12 2 Claims

A device for forming fabric in weaving looms, and is based on the principle of beating weft thread by the reed to the fabric fell. In this device the reed is made in the form of disks with teeth mounted on a drive shaft with a possibility of some translational movement therealong, and positioned angularly offset relative to each other so, that their teeth form a screw-type surface. The teeth on each disk are grouped within an arc



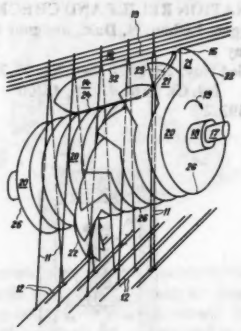
section of this disk, and rise in height in a direction opposite to that of the disk rotation, so that the first short tooth approach the weft thread to the fabric fell, and the last long one beat it.

3,705,606

ROTATING DISK ARRANGEMENT ON A WAVE-TYPE LOOM

Peter Stucki, Tann-Ruti, Zurich, Switzerland, assignor to Ruti Machinery Words Ltd., formerly Caspar Honegger, Ruti, Zurich, Switzerland

Filed Dec. 3, 1969, Ser. No. 881,747
Int. Cl. D03d *41/00, 49/60*
U.S. Cl. 139—12 12 Claims



A rotating disk arrangement on a wave-type loom wherein a plurality of shuttles, each having a drive edge and a guide edge, move simultaneously and successively along a path and serve to insert the weft threads in changing sheds formed during the weaving operation, the arrangement comprising a plurality of rotating disks arranged on an axis of rotation side by side and rotated codirectionally by a small amount along the axis of rotation according to their sequence, the rotating disks serving both for the beating up of the inserted weft threads and for propelling the shuttles along said path. Each disk comprises a drive portion which during rotation propels the shuttles by pushing against the drive edges of the shuttles, and a guide portion against which the guide edges of the shuttles rest to hold the shuttles against rotation from the drive forces applied by said drive portions.

3,705,607

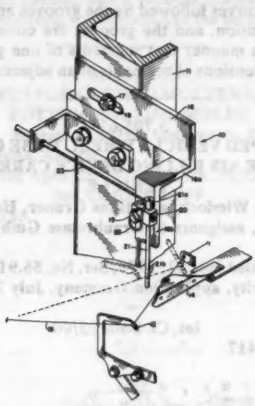
LOOM ATTACHMENTS FOR MAKING FRINGES

James W. Tollison, Greenwood, and Joe Kelley, Donalds, both of S.C., assignors to Riegel Textiel Corporation, Ware Shoals, S.C.

Filed July 13, 1970, Ser. No. 54,552
Int. Cl. D03d *47/34*
U.S. Cl. 139—116 1 Claim

There is disclosed an apparatus for holding the filling yarn

of a shuttleless loom in a position that will prevent the filling



carrier from inserting filling in the warp shed while the warp is advanced a sufficient distance to form a fringe.

3,705,608

METHOD FOR TRANSPORTING A WEFT THREAD THROUGH A WEAVING SHED AND A LOOM FOR PERFORMING SAID METHOD

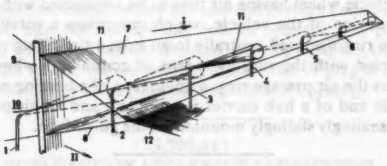
Geert Jan Vermeulen, Beethovenlaan 34,, Deurne, Netherlands

Filed Oct. 22, 1970, Ser. No. 83,177

Claims priority, application Netherlands, Oct. 22, 1969, 6915972

Int. Cl. D03d *47/30*

U.S. Cl. 139—127 P **8 Claims**



A method and apparatus for transporting a weft thread through a weaving shed, by discharging a plurality of aligned jets of transport fluid at points spaced along the shed, the jets being energized successively, in time with the advancement of the leading end of the weft thread, to cause the jets to entrain the leading end of the weft thread progressively and thereby draw the weft thread through the shed.

3,705,609

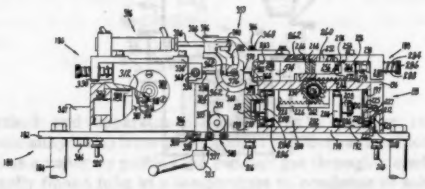
MANUFACTURE OF SPRINGS

George A. Matts, and Robert C. Quarmby, both of Leicester, England, assignors to USM Corporation, Boston, Mass.

Filed Sept. 1, 1970, Ser. No. 68,677

Int. Cl. B21f *35/02*

U.S. Cl. 140—103 **6 Claims**



The invention relates to improvements in machines and methods for forming attached loops in generally longitudinal orientation at or from end portions of coil springs. A coil spring to be provided with a loop as indicated is supported by support means of a machine with an end portion of the spring to be looped, projecting therefrom. The projecting portion is operated on by a plurality of coordinated tools to bend the portion away from the remainder of the spring and impart a permanent set to a portion of the wire of the spring whereby a loop of the desired orientation is permanently provided on the spring. The improvement involves a plurality of fluid pressure operated motors and connecting means for actuating the tools in cooperative manner.

3,705,610

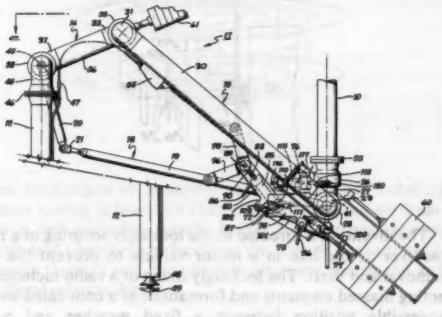
TANK CAR LOADING UNIT

Andre Baudras, Sens, France, assignor to Societe Technique et Commercial d'Installations Industrielles "Luceat", Sens, France

Filed Sept. 23, 1970, Ser. No. 74,724

Int. Cl. B65g *67/00*

U.S. Cl. 141—387 **16 Claims**



An adjustable filling spout structure for loading liquids wherein the spout is supported by an apparatus of lazy tong configuration incorporating a pair of jointed conduit and bar arms. The conduit arm is connected at its inboard end through a 90° elbow and a first horizontal swivel to a second 90° elbow which is connected to a fixed, upright supply conduit through a vertical swivel, and at its outboard end through 90° elbows and a second horizontal swivel to a downwardly depending spout. The spout can be moved in a vertical plane as the supporting structure is pivoted about the axis of the first horizontal swivel, and the apparatus is fully counterweighted along this axis. Driven toggle joint elements control the space between the arms and hence the outward displacement of the spout, while slewing means move the spout about in a circle as the apparatus is turned with reference to the fixed supply conduit.

3,705,611

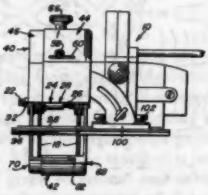
CIRCULAR SAW AND ATTACHMENT THEREFOR

Minoru Sakamoto, 3005 Ualena Street, Honolulu, Hawaii

Filed Dec. 16, 1970, Ser. No. 98,648

Int. Cl. B27b *5/34*; B27g *19/04*

U.S. Cl. 143—37 R **11 Claims**



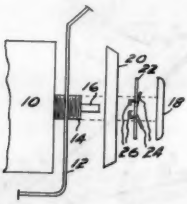
An elongated extension shaft engageable with the drive shaft of a circular saw and projecting therefrom for the recep-

tion thereon of a pair of laterally spaced circular saw blades mounted to provide parallel cuts. A two part positioning sleeve is mounted on the extension shaft between the blades and adjustable so as to achieve a predetermined spacing between the blades. Nut means lock the blades for rotation with the extension shaft. A laterally adjustable fixed guard overlies the upper portion of the laterally adjustable blades and a laterally adjustable swinging guard underlies the adjustable blades.

3,705,612
LOCKING OF CAR RADIOS AND THE LIKE

Erasmus Smit Comley, 49 Piet Joubert Street, Monument Townhip, Krugersdorp, Republic of South Africa

Filed March 31, 1970, Ser. No. 24,063
Claims priority, application Republic of South Africa, March 31, 1969, 69/2297
Int. Cl. F16b *39/32*
U.S. Cl. 151—39 **3 Claims**

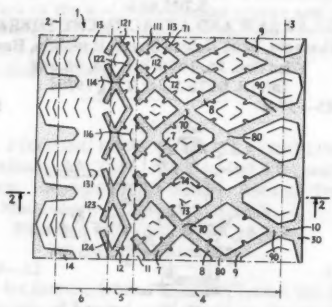


The invention is directed to the lockingly securing of a radio receiver or the like in a motor vehicle to prevent the easy removal and theft. The lockingly fixing of a radio includes co-acting biassed elements and formations at a concealed and inaccessible position between a fixed member and a nut whereby tightening of the nut is permitted while loosening rotational movement is blocked. The co-acting means comprise resiliently biassed detent means and shoulder forming openings. Loosing of the nut being possible only by drilling away portions of the nut at particular positions.

3,705,613
TIRE HAVING TREAD GROOVES FORMING DOUBLE NETWORK OF CONTINUOUS CURVES

Henri Verdier, Beauregard-L Eveque, France, assignor to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Co., Clermont-Ferrand (Puy-de-Dome), France

Filed Feb. 23, 1971, Ser. No. 117,967
Claims priority, application France, Feb. 20, 1970, 7006274
Int. Cl. B60c *11/00*
U.S. Cl. 152—209 **7 Claims**

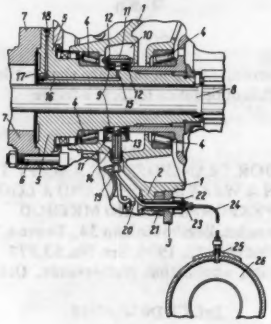


A tire has a tread formed with circumferential grooves following curves that are broken or undulating. The amplitudes of the curves increase in a direction from one edge towards the other edge of the tread. Over more than half the width of the tread, the curves followed by the grooves are substantially in phase opposition, and the grooves are connected to each other in such a manner that segments of one groove lie substantially in extensions of segments of an adjacent groove.

3,705,614
TIRE EQUIPPED VEHICLE WHEEL TO BE CONNECTED WITH A TIRE AIR FILLING DEVICE CARRIED BY THE VEHICLE

Alwin Juttner, Wiesloch, and Hans Gruner, Heidelberg, both of Germany, assignors to Graubremse GmbH, Heidelberg, Germany

Filed July 21, 1970, Ser. No. 56,910
Claims priority, application Germany, July 28, 1969, P 19 38 202.6
Int. Cl. B60c *23/00*
U.S. Cl. 152—417 **1 Claim**

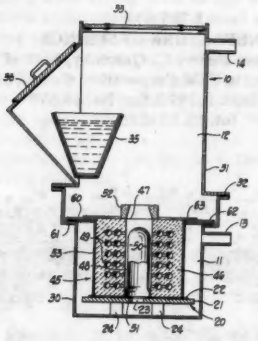


A vehicle wheel having air tires to be connected with an air filling device of the vehicle, which comprises a rotating air passage ring disposed centrally to an axle; a tire filling valve is connected with the ring by means of conduits; a wheel hub receives the air passage ring; a guide face of a bearing neck of the axle and of a hub carrier is provided, and an air passage ring is sealingly slidingly mounted on the guide face.

3,705,615
METAL CASTING PROCESSES WITH VACUUM AND PRESSURE

Claude H. Watts, Mayfield Heights, Ohio, assignor to Precision Metalsmiths, Inc.

Filed Dec. 9, 1970, Ser. No. 96,517
Int. Cl. B22d *27/14, 27/15*
U.S. Cl. 164—62 **12 Claims**



A gas permeable mold, preferably an investment mold, is cast under a vacuum. The pressure on the molten metal ex-

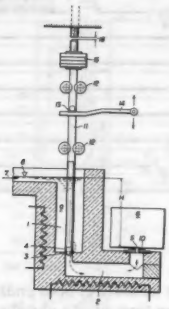
posed through the opening of the mold is raised to atmospheric pressure after casting, and a vacuum is applied to the outside of the mold during solidification of the metal.

3,705,616

APPARATUS FOR CASTING MOLTEN METAL IN BOTTOM-POURING MOLDS

Oskar Tenner, Rossatz, Austria, assignor to Fa. Gebauer & Lehrner, Vienna, Austria

Filed April 23, 1970, Ser. No. 31,121
Int. Cl. B22d *41/09*
U.S. Cl. 164—155 **10 Claims**



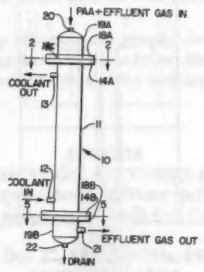
First chamber means define a vertically elongated first chamber and have a bottom formed with a bottom opening communicating with said first chamber. The first chamber means are provided with an overflow inlet communicating with said first chamber on a predetermined intermediate level thereof. Second chamber means define a horizontally elongated second chamber, which is smaller in cross-sectional area than said first chamber and has one end portion communicating with said bottom opening and an opposite end portion formed with an upwardly directed opening adapted to communicate with a bottom-pouring ingot mold. A plug is operable to selectively close and open said bottom opening.

3,705,617

SUBLIMATION APPARATUS AND METHOD

George M. Miller, Winchester, and Max E. Underwood, Bedford, both of Mass., assignors to The Badger Company, Inc., Cambridge, Mass.

Filed Nov. 5, 1970, Ser. No. 87,162
Int. Cl. F28
U.S. Cl. 165—1 **8 Claims**



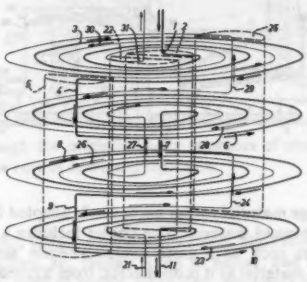
Method and apparatus for recovering a product (e.g. phthalic anhydride) from a hot effluent product gas in which it exists as a vapor by passing the product gas through a cooled internally finned tube at a temperature to condense or sublimate (solidify) the product out of said product gas as a solid on the fins and internal walls of said tube without encountering rapid plugging of the tube.

3,705,618

HEAT EXCHANGER

Etienne Jouet, 19 rue du Panorama, Montigny-les-Cormeilles, and Pascal Rebuffe, 18 rue de Sevres, Boulonge-Billancourt, both of France

Filed Dec. 29, 1969, Ser. No. 888,591
Claims priority, application France, Dec. 27, 1968, 68181215; June 20, 1969, 6920823; July 8, 1969, 6923092
Int. Cl. F25f *3/00*
U.S. Cl. 165—166 **2 Claims**



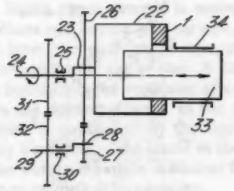
Heat exchangers of generally cylindrical shape, including structure having at least two chambers being wound on themselves in self-enclosing spirals, baffles forming passageways through said chambers to facilitate the flow of heat-exchanging media through said chambers in alternate centripetal and centrifugal relationship.

3,705,619

METHOD OF PRODUCING A TOOTHED RING FOR AN INTERNAL-SHAFT MESHING ROTARY PISTON ENGINE

Svend Holm, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Feb. 16, 1971, Ser. No. 115,579
Claims priority, application Germany, April 13, 1970, P 20 17 558.0
Int. Cl. B24b *1/00*
U.S. Cl. 51—287 **4 Claims**

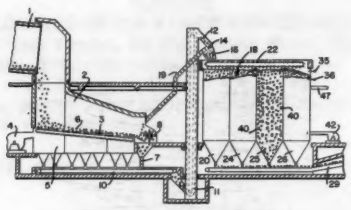


A method and apparatus for producing the ring member of a gerotor gear set. Ring members are first formed roughly to size by broaching a stack of blanks. The honing of the crests and flanks of the teeth is done with a honing mandrel having tapered cross section with the same shape as the star member of a gerotor gear set. The honing mandrel is reciprocated and at the same time is given rotational and orbital movements which correspond to the movements of the same character which occur in the operation of a gerotor gear set wherein the star member may have both rotational and orbital movement relative to the ring member of the gear set.

3,705,620
TWO-STAGE MATERIAL COOLER

Karl-Heinz Kayatz, Hamburg-Nienstedten, Germany, assignor to Claudius Peters, Aktiengesellschaft

Filed Feb. 23, 1971, Ser. No. 118,006
Claims priority, application Germany, March 6, 1970, P 20 10 601.8
Int. Cl. F28d 21/00; F27b 7/20
U.S. Cl. 165—104 12 Claims

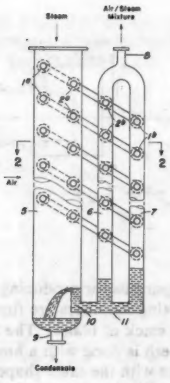


A two-stage material cooler particularly adapted for cooling burning or burned material. The cooler includes a first stage direct cooler such as a grate cooler wherein air is blown through the material as it is discharged from a furnace such as a rotary kiln. The air heated by the hot material is returned as combustion air to the furnace. The partially cooled material is passed through a material breaker and supplied to an indirect cooler for further cooling. The indirect cooler includes a plurality of bins each having a plurality of spaced apart tubes therein. Cooling fluid such as air or water is passed through these tubes. The material to be cooled is placed in the top of these bins and passes downwardly therethrough to be discharged from the bottom of the bins. As material passes through the bins, it contacts the cooling tubes and is thereby cooled.

3,705,621
AIR-COOLED HEAT EXCHANGER

Willem Schoonman, Voorschoten, Netherlands, assignor to The Lummus Company, Bloomfield, N.J.

Filed June 25, 1971, Ser. No. 156,844
Int. Cl. F28b 1/06
U.S. Cl. 165—112 7 Claims

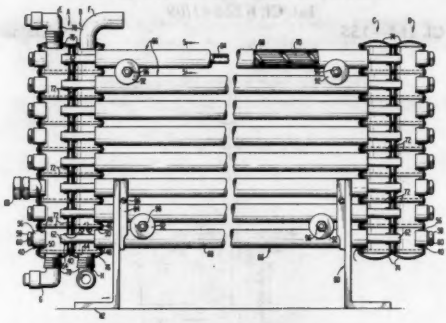


An air cooled heat exchanger, having U-tubes, for cooling gases or liquids. Each tube is connected at one end to an inlet manifold and at the other end to a collection manifold. Cooling air flows co-currently with the condensing vapor or cooling liquid, thus preventing subcooling and freezing.

3,705,622
CLEANABLE TUBE WITHIN A TUBE HEAT EXCHANGER AND METHOD OF FORMING MODULAR HEADERS THEREFOR

Leonard H. Schwarz, West Hartford, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Filed July 7, 1970, Ser. No. 52,902
Int. Cl. F28d 7/10
U.S. Cl. 165—143 5 Claims

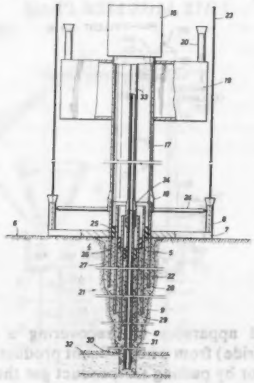


Inner and outer headers at both ends of a tube within a tube heat exchanger are formed of a plurality of axially stacked and brazed drawn metal tubular shell segments. Segments for all headers are identical and carry axially aligned large diameter and small diameter holes on opposite sides thereof for facilitating reception of the inner tube coupling the outer headers and the outer tube coupling the inner headers as well as bushings receiving removable plugs to facilitate cleaning of the interior of the inner tubes of the heat exchanger tube assemblies.

3,705,623
OFFSHORE WELL EQUIPMENT WITH PEDESTAL CONDUCTOR

Wouter H. van Eek; Bob E. Busking, and Adrianus W. van Gils, all of The Hague, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed June 10, 1971, Ser. No. 151,748
Claims priority, application Great Britain, June 17, 1970, 29,424/70
Int. Cl. E21b 7/12, 43/01
U.S. Cl. 166—.6 10 Claims



Apparatus and method for drilling and completing subsea wells using a wellhead mounted on a pedestal conductor supported above a conductor pipe string by a buoyant member.

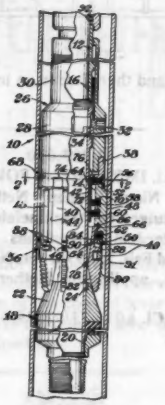
The conductor string supports a plurality of casings which are cemented over their entire lengths. A single small-diameter casing is suspended from the wellhead and extends over the length of the pedestal conductor.

3,705,624

SLIP AND DRAG BLOCK ASSEMBLY

Charles A. Pitts, Wichita Falls, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 21, 1971, Ser. No. 154,954
Int. Cl. E21b *43/10, 23/06, 33/129*
U.S. Cl. 166—216 **7 Claims**



This invention relates to a slip and drag block assembly for use with a packer or bridge plug, for example, in the casing of an earth well.

The drag block elements are spring loaded and held within a slotted tubular cage member which is a casting. The slip elements, spring loaded, are pivoted from the drag block elements and are held in position by the tubular cage. Setting of the slips is by movement of the cone assembly of the packer or bridge plug, for example.

Insertion of the drag block elements into the cage is accomplished by means of a rotatable tubular ring contiguous to the drag block end of the cage and having a notch in its end facing the cage whereby each drag block element is inserted in a slot in the cage as the notch in the rotatable ring is aligned therewith. The notch is then successively rotated to the next cage slot assembly for insertion of the drag block element. After the drag block elements are inserted, the rotatable ring is secured with the notch located between a pair of cage slot arrays.

Because the slip elements are pivoted from the drag block elements, the movement required to set the slips is the same regardless of the weight rating of the nominal size of the casing used.

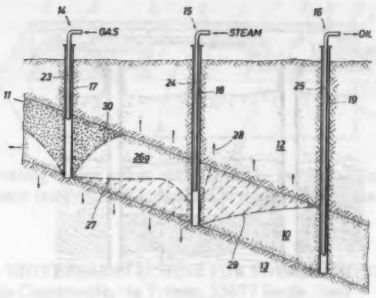
3,705,625

STEAM DRIVE OIL RECOVERY PROCESS

Derrill Gene Whitten, Houston, Tex., and Peter Vanmeurs, Denver, Colo., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 22, 1971, Ser. No. 191,657
Int. Cl. E21b *43/24*
U.S. Cl. 166—252 **9 Claims**

A line drive steam injection process in a dipping formation is improved by injecting steam into a row of up-dip wells and producing oil from two or more rows of down-dip wells. After steam breaks through into the first row of down-dip producing wells, steam injection is stopped in the up-dip wells and steam injection is initiated in the row of down-dip wells into which steam has broken through. Simultaneously, a non-condensing gas is injected into the up-dip wells to prevent upward migration into the segment of the formation contacted by steam injected through the original up-dip injectors of steam injected into the new row of down-dip injectors.

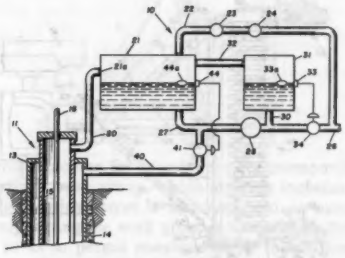


3,705,626

OIL WELL FLOW CONTROL METHOD

Edwin E. Glenn, Jr., Dallas; Vasel R. Slover, and Malcolm K. Strubhar, both of Irving, all of Tex., assignors to Mobil Oil Corporation

Division of Ser. No. 732,460, May 27, 1968, Pat. No. 3,578,077. This application Nov. 19, 1970, Ser. No. 91,174
Int. Cl. E21b *43/00, 43/12*
U.S. Cl. 166—267 **3 Claims**



This specification discloses a method and apparatus for controlling flow of a multiphase fluid stream from a partially depleting supply source such as a pumping oil well so that the flow rate of the liquid phase thereof is maintained substantially constant. Where said source is an oil well, the multiphase fluid is pumped from the well into a separator where it is separated into its liquid and gas phases. A constant volume pump withdraws liquid from the separator at a set flow rate. A conduit connects the separator back to the well and has a valve therein which is controlled by the liquid level in the separator whereby a portion of the liquid in the separator can be returned to the well to maintain sufficient fluid in the well for the well pump to operate at its capacity.

3,705,627

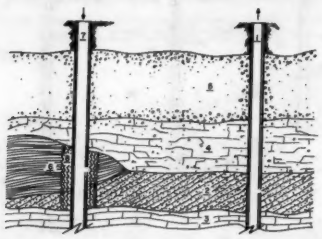
INHIBITION OF SALINE WATER INTRUSION INTO FRESH WATER AQUIFERS

Perry A. Argabright, Sedalia; Jack L. Hummel, and C. T. Presley, both of Littleton, all of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Feb. 1, 1971, Ser. No. 111,422
Int. Cl. E21b *33/138*
U.S. Cl. 166—295 **9 Claims**

Solutions of soluble compounds, e.g., aqueous alkaline solutions of substituted isocyanuric acids, are injected into an in-

truding front of saline water to form an insoluble precipitate, thus decreasing formation permeability and reducing or

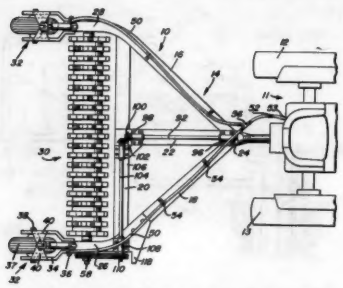


eliminating contamination of fresh water aquifers by saline water.

3,705,628
SOD CULTIVATOR

William M. King, R.R. No. 2, Lewisburg, W. Va.

Filed Oct. 30, 1970, Ser. No. 86,152
Int. Cl. A01b *9/00*
U.S. Cl. 172—68 5 Claims



An implement includes a shaft mounting alternatingly positioned members of two distinct types. The first type is a spur disc that digs a narrow seed bed track as the implement is drawn along sod. Each disc is bounded on both sides thereof by members of a second type characterized as roller means. The roller means push down on the sod while the track is being formed so that the lateral boundaries of the track are not disturbed.

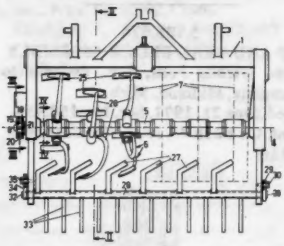
3,705,629
MACHINE FOR DIGGING SOIL

Herbert Vissers, Nieuw-Vennep, Netherlands, assignor to Landbouwerktuigen-en Machine-fabriek H. Vissers N.V., Binnenweg, Rotterdam, Netherlands

Filed Feb. 10, 1970, Ser. No. 9,686
Claims priority, application Netherlands, Feb. 5, 1969, 69.02244
Int. Cl. R01b *33/00*
U.S. Cl. 172—94 7 Claims

In a digging machine a rotor with spades is driven around a digging axis, said spades being tiltably mounted on said rotor.

A guide member for guiding the tilting movement of said spades is improved so that the tilting of the spades is accelerated during an angular displacement of the rotor greater than 45°, resulting in an increase of the permissable rotational

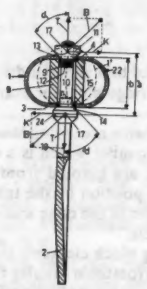


speed of the rotor and therefore in an increase of the capacity of the machine.

3,705,630
AGRICULTURAL IMPLEMENT FOR CLOD BREAKING

Herbert Vissers, Nieuw-Vennep, Netherlands, assignor to Landbouwwerktuigen-en Machinefabriek H. Vissers N.V., Binnenweg, Rotterdam, Netherlands

Filed Feb. 2, 1970, Ser. No. 8,045
Claims priority, application Netherlands, Feb. 3, 1969, 6901676
Int. Cl. A01b *23/02, 19/02, 35/22*
U.S. Cl. 172—713 5 Claims



An agricultural implement for clod breaking, comprising a hollow support, for instance of tubular or U-section, and a plurality of clod breaking members extending through recesses in the top and bottom walls of said support and attached thereto by screwed connections.

For providing a rigid support having thin walls and a rigid attachment of the clod breaking members these clod breaking members are inserted through bushes which support the top and bottom walls of said support against being displaced inwardly.

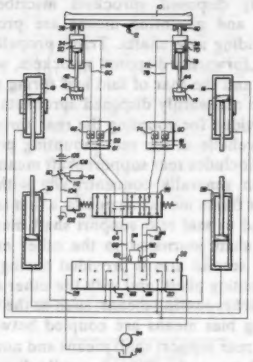
3,705,631
HYDRAULIC TILT AND PITCH CONTROL FOR DOZER BLADE

David H. Seaberg, Davenport, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed May 27, 1971, Ser. No. 147,514
Int. Cl. C02f *3/76*
U.S. Cl. 172—804 4 Claims

A fluid control system for a load handling implement such as a dozer blade carried by means of a universal joint on a load handling machine which comprises a pair of double-acting fluid cylinders having one end attached to the implement and the other end to a stationary part of the machine; the pair of fluid cylinders are each connected at opposite ends by a pair of fluid lines to a source of fluid under pressure including a

main control valve and a selector valve; the main control valve and the selector valve are actuated by a single control lever which when pivoted in one direction positions the main control valve for tilting the implement clockwise and if pivoted in the opposite direction positions the main control valve for tilting the implement counterclockwise; and the control lever is provided with an actuator to condition the selector valve for pitching of the implement in either forward or rearward inclination by actuation of the control lever actuator coupled with pivotal movement of the control lever in one or the other of the tilt-controlling directions.



3,705,632

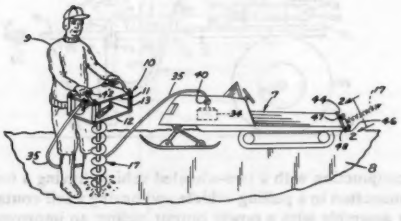
PORTABLE ELECTRIC ICE AUGER

Leo J. Burke, 8405 M59, Howell, Mich.

Filed April 5, 1971, Ser. No. 131,277

Int. Cl. E21c *1/00*

U.S. Cl. 173—27 **3 Claims**



An ice auger transportable on a snowmobile, and utilizing the electrical system of the snowmobile for its power. The electric motor and drive train are supported by a pair of transparent, di-electric plates, which serve as a light weight, safety housing for the power train for the auger bit, and insures direct visual control of the bit when in use.

3,705,633

REVERSIBLE PERCUSSION DEVICE FOR MAKING HOLES IN GROUND BY COMPACTING THE LATTER

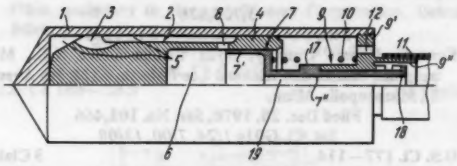
Boris Vasilievich Sudinishnikov; Alexandr Dmitrievich Kostylev; Konstantin Stepandvich Gurkov; Konstantin Konstantinovich Tupitsyn, and Vladimir Dmitrievich Plavskikh, all of Novosibirsk, U.S.S.R., assignors to Institut Gornogo Dela Sibirskogo otdelenia Akademii, Nauk, U.S.S.R.

Filed April 5, 1971, Ser. No. 131,136

Int. Cl. E21b *1/00, 11/02*

U.S. Cl. 173—91 **4 Claims**

A reversible, pneumatically-operated percussion device having an axially-displacable air-control bushing positionable in one of two positions to correspondingly control forward and reverse movements of the device; the bushing cooperating with a casing and having projections interacting with those on the casing whereby reduction of operating pressure and a cooperating spring effect reversal of the impact effected by a percussor reciprocably supported in the housing of the device.



3,705,634

UNIVERSAL MACHINE FOR FOUNDATIONS

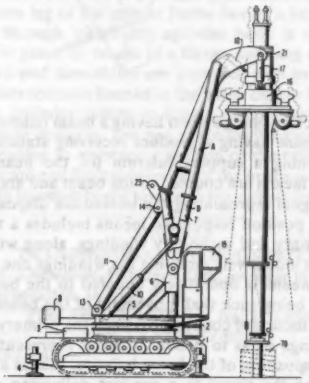
Antonio Casagrande, via Trieste, 33077 Sacile, Italy

Filed Aug. 14, 1970, Ser. No. 63,894

Claims priority, application Italy, Aug. 14, 1969, 60554 A/69

Int. Cl. E21b *7/02*; E21c *5/06, 5/11*

U.S. Cl. 175—122 **40 Claims**



A universal machine for foundations for transporting and easily utilizing a work group, which machine includes a base on which a rotating turret is mounted, and an extendable frame for supporting the work group is mounted on the rotating turret so as to permit construction of foundations. The base of the machine has self-moving means such as, for example, a crawler-mounted base. For road transport, the work group and the extendable frame can be lowered, and a counterweight automatically provides the correct equilibrium.

3,705,635

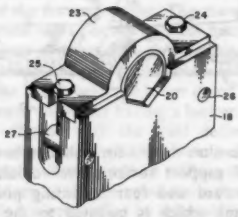
LARGE DIAMETER EARTH BORING BIT

William M. Conn, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 13, 1971, Ser. No. 106,220

Int. Cl. E21c *13/12*; F16c *19/08*

U.S. Cl. 175—364 **4 Claims**



The rolling cutters of a large diameter earth boring bit are locked in place in a saddle mount yet may easily be removed.

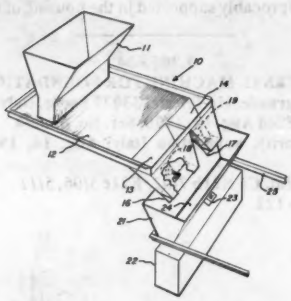
A vee-shaped, slabbed-off portion of the journal is held in place by a cap bolted to the saddle mount.

3,705,636

PRODUCT WEIGHING SYSTEM

Kenneth Robert Dunphy, 3322 Belden Drive N.E., Minneapolis, Minn., and Richard Lee Helseth, 6120 5th Avenue S., Minneapolis, Minn.

Filed Dec. 28, 1970, Ser. No. 101,466
Int. Cl. G01g *1/24, 7/00, 13/08*
U.S. Cl. 177—114 **3 Claims**



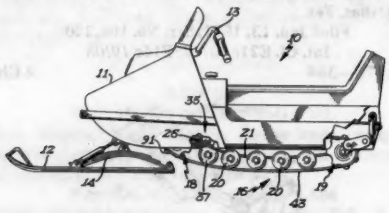
A product weighing system having a beam balance which includes a beam having a product receiving station and pivot means forming a support fulcrum for the beam. Position responsive means are coupled to the beam and are adapted to deliver a signal representing the immediate disposition of the beam. The position responsive means includes a transformer having primary and secondary windings, along with movable core means inductively coupling the windings one to another. The core means is operatively coupled to the beam, the arrangement being such that movement of the beam is adapted to vary the inductive coupling between the primary and secondary windings so as to deliver a signal representing the immediate disposition of the beam balance. Means are provided for coupling the signal to a product delivering conveyor, a weighing container, and gates which function in combination with the conveyor and control delivery of product into the weigh container. If desired, the signal may also be coupled to read-out means including visual or audible read-out.

3,705,637

SNOWMOBILE SUSPENSION SYSTEM

Charles V. Harvey, Route 3, Box 233, Forest Lake, Minn.

Filed May 27, 1971, Ser. No. 147,411
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **15 Claims**



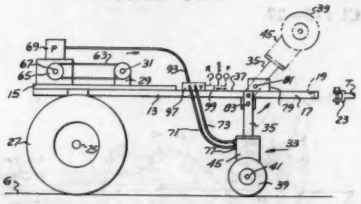
A track suspension means for vehicles having an endless track drive and support surface, the vehicle having frame means with forward and rear mounting points. The track suspension means which is coupled to the vehicle at the mounting points includes longitudinally disposed flexible leaf spring means normally arranged convexly to the running surface, with the leaf spring means having an axis disposed generally parallel to the track axis, and being adapted to flex vertically. The leaf spring, which carries a plurality of supporting means such as bogie wheels for the track, is secured at its forward end to the vehicle frame at the forward mounting point. The endless track suspension means includes forwardly and rearwardly disposed sprockets inscribed within the endless track, and mounting means are provided for the sprockets including axle shafts. Track propelling means are coupled to the forwardly disposed sprockets, while track tensioning means and the rear of said leaf spring are operatively coupled to the rearwardly disposed sprockets. Pivot linkage means are provided for coupling the rear sprocket mounting means to the vehicle at the rear mounting point. The pivot linkage means includes rear support shaft means journaled for pivotal rotation generally concentrically with the common axis of said rear frame mounting points, a first torque arm coupled at one end to said rear support shaft means and with a floating pivot shaft journaled to the other end of the first torque arm. A second arm is provided having one end journaled to the floating pivot, and with the other end coupled to the rear sprocket mounting means, such as the rear axle shaft. Resilient spring bias means are coupled between the frame means and the rear support shaft means and normally urge the mounting shaft means for the rearwardly disposed sprockets such as the rear axle shaft in a direction toward the lower span of the endless track.

3,705,638

AUXILIARY DRIVE AND SUPPORT MECHANISM FOR MOBILE VEHICLES

John P. Shock, 15120 Charlevoix, Grosse Pointe Park, Mich.

Filed May 26, 1971, Ser. No. 147,058
Int. Cl. B60k *25/04*
U.S. Cl. 180—14 A **6 Claims**



In conjunction with a two-wheeled vehicle having a tongue for connection to a pulling vehicle and having a self contained motor assembly with a power output means; an improved independent drive and support therefore which includes a support bar pivoted on said tongue and secured thereto mounting a transmission housing having a power driven output shaft driving a ground engaging support wheel; there being a hydraulic motor on said housing having an output connected to said output shaft and an auxiliary power take off on said motor assembly connected to a pump and with conduits interconnecting said pump and hydraulic motor.

3,705,639

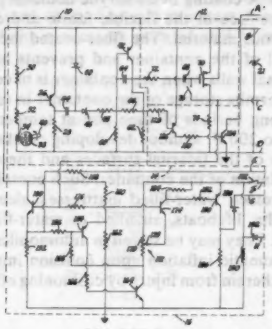
AUTOMATIC RE-ENGAGE CIRCUIT FOR AN ELECTRONIC SPEED CONTROL SYSTEM

Ronald L. Colling, Millington, and Myron U. Trenne, Flint, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 9, 1971, Ser. No. 161,055
Int. Cl. B60k *27/00;* **F02d** *11/10*
U.S. Cl. 180—105 **3 Claims**

An automatic re-engage circuit for an electronic vehicle speed control system which is armed when the speed control system is disengaged and the vehicle speed has decreased to a predetermined speed below the former cruise speed. After

being armed, the automatic re-engage circuit is operative to automatically re-engage the speed control system when the



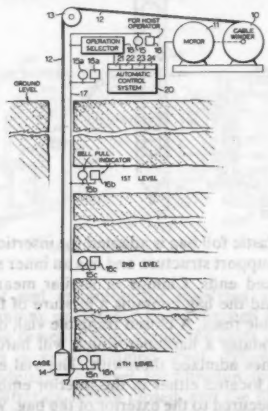
vehicle is accelerated from the lower speed to the former cruise speed.

3,705,640

SIGNALLING SYSTEM FOR MINE HOISTS

Peter De Hertel Eastcott, Peterborough, Ontario, Canada, assignor to Canadian General Electric Company Limited, West Toronto, Ontario, Canada

Filed Jan. 29, 1071, Ser. No. 110,991
Claims priority, application Canada, Feb. 18, 1970, 75142
Int. Cl. B66b *1/16*
U.S. Cl. 187—29 R **4 Claims**



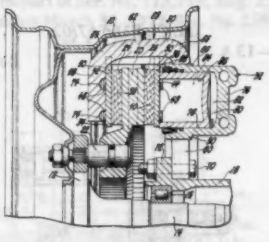
In existing mine hoists, much of the complex equipment needed for automatic control is located at the working levels in the mine where environmental conditions are poor. According to this invention, the complex equipment needed for automatic control of the hoist is located in the same room as the hoist drive where the environment is warm and dry. This is achieved through the use of control equipment of a type that responds to the coded pulses generated in the Bell Pull circuit in the way that the operator responds to the ringing of his bell or flashing of his light. In essence, this equipment duplicates the responses of the operator in that it counts pulses, distinguishes between sets of pulses, remembers this, exercises a degree of logic, and applies the information for control purposes. Moreover, it can be located in the same room as the hoist drive where it is dry and warm. The existing Bell Pull system or an equally simple circuit can now be used for sending the appropriate signals from the various mine levels to the control equipment. An operation selector is provided for selecting a mode of hoist operation between automatic or manual through a suitable connection with the Bell Pull circuit. When operation is manual control, the signals sent by the Bell Pull will, of course, be displayed to the operator.

3,705,641

DISC BRAKE

Frank W. Brooks, and Norman L. Gebhart, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 20, 1971, Ser. No. 108,099
Int. Cl. F16d *69/04*
U.S. Cl. 188—73.3 **6 Claims**



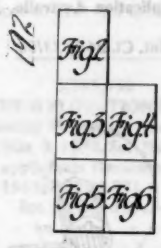
A disc brake for an automotive vehicle in which the caliper frame is made from a stamped steel plate and bent to form a J-section, one leg of the caliper frame having a keyhole-shaped opening through which the cylinder body is mounted and retained in place by means of a flange and tang arrangement. The brake pad assemblies are provided with projections extending into recesses formed in the other caliper leg and in the hydraulic cylinder piston to locate the pad assemblies and hold them in position. The pad assembly backing plates have arms extending to embrace a portion of the caliper frame to further locate and limit movement of the brake pad assemblies and also to transmit brake torque to the caliper frame.

3,705,642

TRANSMISSION CONTROL SYSTEM

Charles H. Thompson, Pittsboro, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 12, 1971, Ser. No. 114,986
Int. Cl. F16h *37/06*
U.S. Cl. 192—4 **15 Claims**



There is disclosed a control system providing manual and also automatic shift control for a multispeed forward and reverse end vehicle transmission. The automatic operation is provided by pilot valves which are controlled by a pressure indicative of vehicle speed and also a pressure indicative of engine torque demand to condition shift valves to effect shifting between all of the forward drives. The manual control is provided by solenoid valve control over the bias of the shift valves to effect manual shifting with downshifting to lower speed range drives being delayed until vehicle speed is suitable for the speed range of the selected lower drive. The transmission includes a torque converter having a lockup clutch whose engagement is effected with the fluid delivery used for the selected drive engagement with the lockup clutch engagement being momentarily interrupted on shifting between certain of the forward drives by shuttle valve operation. A neutral valve whose operation is controlled by solenoid valves operates to deliver fluid to the shift valves for the drive engagements and on interruption of electrical power to its solenoid valves, operates to

3,705,643

BRAKE & CLUTCH CONTROL FOR INDUSTRIAL TRACK

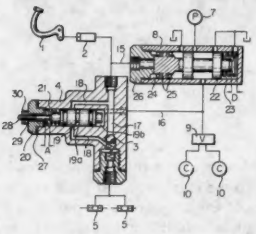
Seijiro Iwaoka, and Hiroo Mori, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi-ken, Japan

Filed June 25, 1970, Ser. No. 49,819

Claims priority, application Japan, June 27, 1969, 44/51131; June 30, 1969, 44/52057; Sept. 10, 1969, 44/72203

Int. Cl. F16d *67/02*

U.S. Cl. 192—13 A 9 Claims



The fluid control system applied to the industrial trucks, is provided with a check valve in a fluid line between a master cylinder and a plurality of wheel cylinders so as to interrupt the return flow of brake oil from the wheel cylinders to the master cylinder, and an interfering means in a bypass line to the check valve so as to admit the return flow of the brake oil in a controlled or restricted condition when the oil pressure in the hydraulic clutches reach to a sufficient pressure for engaging the clutches.

3,705,644

CONVEYOR SCREW ELEMENT

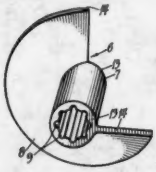
Claude Edward Kawchitch, 1 Charles Street, Jolimont, Victoria, Australia

Filed Jan. 22, 1971, Ser. No. 108,805

Claims priority, application Australia, Jan. 23, 1970, PA 0155/70

Int. Cl. B65g *33/00*

U.S. Cl. 198—213 2 Claims



Conveyor screw elements having molded flight portions of relatively short lengths and integrally molded hollow, longitudinally grooved hubs adapted to be mounted on a shaft having longitudinally extending splines. Each of the screw elements is adapted to be angularly offset relative to adjacent ones on the shaft.

3,705,645

INFLATABLE FLEXIBLE CONTAINER AND FABRIC FOR MAKING IT

Patricia F. Konen, Feasterville, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed April 30, 1971, Ser. No. 139,224

Int. Cl. B65d *85/00*; D03d *11/00*

U.S. Cl. 206—46 R 10 Claims

Textile fabrics are formed into containers, envelopes, or bags which are adapted to be partially or completely filled with a fluid, e.g. water or other liquid or to be inflated with air or other gas. A coating of an acrylic addition polymer is provided on one face of the flexible fabric and covered with a layer of fibrous material. The fiber-coated face becomes the interior wall of the container and prevents adhesion of adjacent internal walls when the container is in collapsed condition. This permits storage of the container in collapsed condition over long periods of time and at temperatures ranging from −20° to 200°F. without developing cracks in the coating or adhesion of the internal surfaces and thereby interfering with the inflation of the container. Such containers are useful as air-mattresses, water-filled mattresses, sleeping bags, pillows, lifebelts, lifeboats, air-filled or water-filled chairs, ottomans, etc. They may be stored in automobiles or other vehicles for automatic inflation upon collision impact to protect passengers therein from injury by cushioning effect.

3,705,646

CARTRIDGE FOR FIXING ANCHOR ELEMENTS IN HOLES OF A SUPPORT STRUCTURE

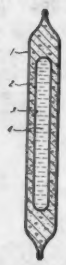
Alfons Jankowski, Essen, and Fritz Schuermann, Winz/Niederwenigern, both of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Filed Jan. 5, 1971, Ser. No. 103,359

Claims priority, application Belgium, Jan. 8, 1970, 83659

Int. Cl. B65d *79/00*

U.S. Cl. 206—47 A 9 Claims



A tubular plastic foil bag is adapted for insertion into a hole provided in a support structure and has an inner side, an outer side, and spaced ends. Clamps or similar means closes the spaced ends and the bag contains a mixture of filler material and a hardenable resin. A closed frangible vial, of glass or the like, accommodates a hardener which will harden the resin when it becomes admixed therewith. The vial extends along the bag and is located either in the interior embedded in the mixture, or is secured to the exterior of the bag. When the cartridge is inserted into a support structure and subsequently the bag is ruptured and the vial is broken, the hardener and the mixture can admix and the resin will harden.

3,705,647

APPARATUS FOR CHECKING THE CIRCUMFERENTIAL EDGE SURFACE AND THE DIAMETER OF DISC-SHAPED OBJECTS

Ake Torgny Bergavist, Finspang, Sweden, assignor to Aktiebolaget Svenska Metallverken, Vasteras, Sweden

Filed Dec. 22, 1970, Ser. No. 100,748

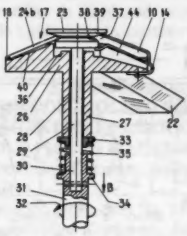
Claims priority, application Sweden, Dec. 23, 1969, 17829/69

Int. Cl. C10g *25/00*

U.S. Cl. 209—88 18 Claims

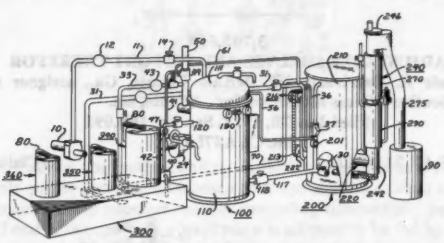
An apparatus for checking disc-like objects for edge defects and deviations in the diameter of said objects from a predetermined standard diameter. The apparatus includes a movement path for the objects being checked which is defined by two support members. The object supporting members are arranged to move in a parallelistic pattern of movement in

relation to each other and are constantly biassed in a direction towards each other, the distance between said members being maintained at a pre-fixed magnitude by the object present in the movement path defined by said members. Also arranged in the vicinity of the movement path of said object is a pivot



member, which is caused to be located in said movement path upon axial movement of one of said support members, whereby a defective object located in said path and contributing to said axial movement is pivoted over said pivot and rejected by the apparatus.

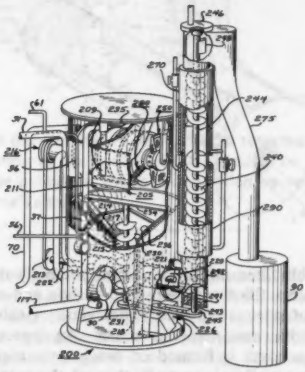
3,705,648
FILTRATION SYSTEM
Kostas Savas Arvanitakis, 7031 W. 63rd, Chicago, Ill.
Continuation-in-part of Ser. No. 173,777, Aug. 23, 1971. This application March 30, 1972, Ser. No. 239,519
Int. Cl. B01d *37/02*
U.S. Cl. 210—66 **29 Claims**



Method of and apparatus for clarifying a contaminated liquid by pumping unclarified liquid through a primary filter increasing the pressure drop across the filter until such pressure reaches a predetermined level. When the pressure reaches a predetermined level, the filtration operation is interrupted, the filtration system closed, and the filter cake accumulated on the primary filters is removed. The contents of the primary filter chamber are drained to a secondary filter chamber or desludger whereat the liquid bearing the dislodged filter cake suspension from the primary filters and additional filter aid media is re-circulated through a secondary filtration system forming a filter cake on the surface thereof and clarifying the contents of the primary filter chamber drawn thereinto. The liquid in the primary filter chamber, clarified thereby, is pumped through the mixing chamber of a pre-coat feeder whereat various filter cake forming media are added thereto. The clarified liquid bearing the suspended filter aids is pumped through the primary filter chamber for re-circulation through the primary filters to form a new filter cake on the surface thereof. When the new filter cake has been formed the filtration system is automatically placed on line to clarify the liquid passing therethrough.

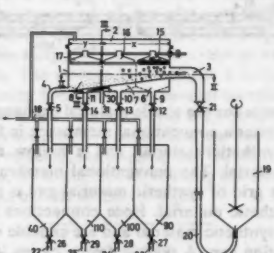
While the primary filter is clarifying liquid passing therethrough, the secondary filter of the secondary filtering chamber is cleansed of accumulated filter cake which settles to the bottom of the secondary filter chamber. The expended filter cake or sludge is conveyed downwardly by a central auger in the desludger chamber into a horizontal auger whereat the expended cake or sludge is conveyed to a vertical auger conveyer. The vertical auger is heat jacketed to expose the sludge to heat for solidifying the sludge to a desired consistency and expelling it into a container for disposal.

3,705,649
DESLUDGER APPARATUS AND PROCESS
Kostas Savas Arvanitakis, 7031 W. 63rd, Chicago, Ill.
Continuation-in-part of Ser. No. 173,778, Aug. 23, 1971. This application March 30, 1972, Ser. No. 239,630
Int. Cl. B01d *37/00*
U.S. Cl. 210—66 **29 Claims**



Method of and apparatus for collecting and removing contaminants from a filtration system by passing unclarified contaminant bearing liquid through a filter apparatus to collect the contaminants thereon and discharge the liquid clarified thereby. At a predetermined time, the discharge from the filtration system to the filter apparatus is interrupted and the contaminants removed from the filter apparatus to the unclarified liquid whereat they are collected and conveyed out of the apparatus. The collected contaminants are partially solidified by exposure to heat and conveyed from the system for disposal.

3,705,650
VACUUM FLOTATION DEVICE
August Gotte, Ronheider Winket 23, Aachen, Germany
Filed Nov. 9, 1970, Ser. No. 87,879
Claims priority, application Germany, Nov. 11, 1969, P 19 56 530.1; Aug. 11, 1969, P 20 39 871.4
Int. Cl. B01d *21/24*
U.S. Cl. 210—221 **19 Claims**



A vacuum foam flotation apparatus for treatment of turbid liquids in which the liquids flow in a trough in an evacuated housing, while conveying means move laterally of the trough and displace foam from the surface of the liquid in the trough into foam pockets arranged along the side of the trough. At

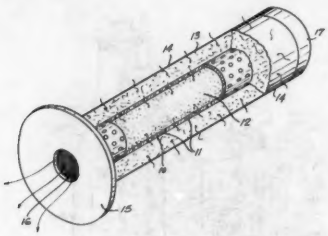
least the first portion of the trough has laminar liquid flow therein, while agitating means may be provided to agitate the liquid in the trough beyond the region of laminar flow.

3,705,651

FILTER SYSTEM EMPLOYING ACTIVATED CARBON, POROUS MATERIAL AND DIATOMACEOUS EARTH

Samuel H. Klein, 2240 Halifax Drive, Apt. 1011, Ottawa, Ontario, Canada

Filed Sept. 10, 1971, Ser. No. 179,332
Int. Cl. B01d 27/02
U.S. Cl. 210—266 5 Claims



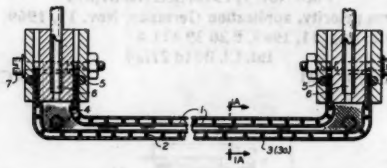
A disposable filter unit for consumer potable water consists of an inner core filled with activated carbon and surrounded by a body of porous material (fiber glass or asbestos) impregnated with diatomaceous earth. An outer layer of diatomaceous earth is formed on the porous material. The direction of water flow is inwardly through the outer materials to the core so that the carbon is arranged downstream of the other filtering materials.

3,705,652

APPARATUS FOR STERILE MATERIAL EXCHANGE

Horst Russmann, Neu Isenburg, and Helmut Determann, Frankfurt am Main, both of Germany, assignors to Biotest-Serum-Institut GmbH, Frankfurt/Main-Niederrad, Germany

Filed March 4, 1970, Ser. No. 16,331
Claims priority, application Austria, March 6, 1969, A 2242/69
Int. Cl. B01d 31/00
U.S. Cl. 210—321 11 Claims



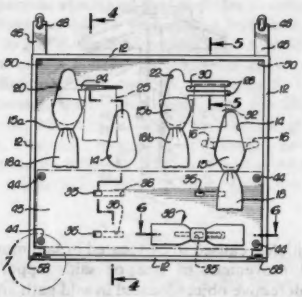
An apparatus for the sterile material exchange in solutions, which comprises a conventional membrane in form of a hose, a grid of synthetic material, and a hollow empty hose of synthetic material. The conventional membrane is disposed between the grid of synthetic material and is received in the hose of synthetic material. Hose connections are carried by the hose of synthetic material and are capable of being closed by a protection cap. A sealing device closes jointly both the hoses, and both hoses permit an access capable of closing by another protection cap to the membrane connection. In one embodiment of the apparatus, the hoses are bent at substantially a right angle for insertion into the sealing or closing device. The invention also includes the system of hoses being wound in a double spiral about two tubes of synthetic material.

3,705,653

NECKTIE RACK

Armand J. Pereyra, 104 West C Street, Ontario, Calif.

Filed April 13, 1971, Ser. No. 133,548
Int. Cl. A47f 7/00
U.S. Cl. 211—13 15 Claims



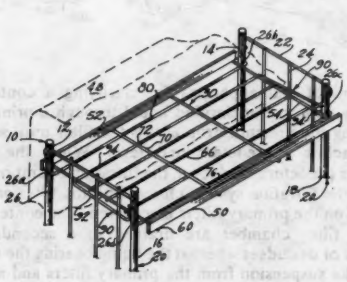
A normally upright panel has apertures shaped for engagement by pretied four-in-hand neckties and apertures for conventional untied neckties with the neckties overhanging the front face of the panel. The smaller ends of the tapered knots of pretied four-in-hands extend through the apertures with wider ends engaging the rims of the apertures on the back face of the panel. Conventional untied four-in-hands are folded and the folded portions are either wedged into tapered longitudinal slots that are formed by apertures or are looped over tongues of the panels that are formed by apertures.

3,705,654

ADJUSTABLE SHELVES AND SUPPORT THEREFOR

Wade H. Barrineau, III, DeKalb County, Ga., assignor to Southern Gross Industries, Inc., Atlanta, Ga.

Filed Jan. 20, 1971, Ser. No. 108,091
Int. Cl. A47f 5/10
U.S. Cl. 211—176 13 Claims



Especially suitable for use in confined areas such as the inside of a panel truck end support units fabricated from plated steel wire each includes vertical posts or standards drilled at spaced intervals with the holes in front post being substantially in alignment horizontally with the holes in the back post. Shelves fabricated from plated steel wire are easily located and removably attached to both of the end panels in the holes of the post thereof from one side of the assembly which may be the aisle of a panel truck. Each shelf is held in place by rearward projecting and horizontally disposed pins on each end of the shelf and each pin being inserted in their respective aligned hole in the back post of the assembly and rearwardly depending ends on each end of the front of a respective shelf which likewise is positioned in the corresponding hole in each of the front post. Shelves are positioned and placed for use by aligning the respective pins at the front and the back of the shelf with the respective openings in the vertical posts and

then pushing the shelf rearwardly into position. The shelf is removed by pulling same forward. Optionally a spring member made from a piece of bent and looped wire is pressed out of the way for insertion of the shelf and permitted to spring into position behind the post once the shelf is seated in the respective holes thereby preventing accidental dislodgement of the shelf. The spring member is displaced manually by pressure from one finger while holding on to another part of the shelf.

3,705,655

DEVICE FOR THE CONTROLLED ROTATION AND FEEDING OF A WORKPIECE PARTICULARLY FOR A COLD PILGER MACHINE

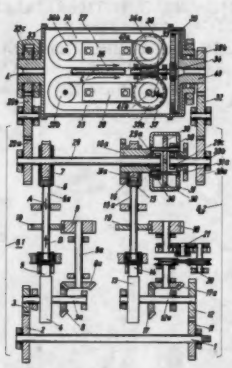
Heinz Fahrenholz, Duisburg, Germany, assignor to Demag AG, Duisburg, Germany

Filed June 21, 1971, Ser. No. 154,776

Claims priority, application Germany, July 10, 1970, P 20 34 315.1

Int. Cl. B65h *51/00*

U.S. Cl. 214—338 **7 Claims**



A device for feeding oblong workpieces, particularly for a cold pilger machine comprises first and second endless conveyors having opposed reaches extending substantially parallel and between which a workpiece is adapted to be fed by engagement with the conveyor. The conveyors are supported in a housing which is rotatably mounted in order to impart a rotation to the workpiece in addition to its transverse feeding movement. The apparatus includes an input or drive shaft connected through a first cam controlled gearing for controlling the rotation of the housing and connected through a second cam controlled gearing for controlling the advancement movement of the conveyors. The second cam controlled gearing includes a belt drive which provides for a variation of operation and a drive through planetary gearing and rotary gear members for effecting the drive of the conveyor elements.

3,705,656

QUICK-ATTACH LOADER BUCKET

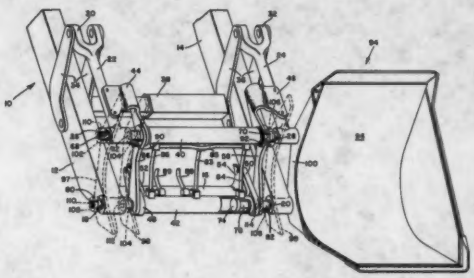
Richard H. Hunger, Dubuque, Iowa, and Leland Glen Gilbert, Moerfelden, Germany, assignors to Deere & Company, Moline, Ill.

Filed Feb. 18, 1971, Ser. No. 116,412

Int. Cl. E02f *3/70*

U.S. Cl. 214—145 **8 Claims**

A loader has a pair of forwardly extending lift arms with a pair of forwardly extending tilt control links above the lift arms. A loader bucket is mounted for quick attachment to or detachment from the forward end of the lift arms and control links by means of a mechanism controlled from the operator's seat. The attachment mechanism includes a pair of transversely extending, vertically spaced hydraulic cylinders with piston rods extending from both ends of the cylinders. The upper cylinder is attached to the forward end of the tilt control links and the lower cylinder is attached to and extends between the forward end of the lift arm. The outer ends of the piston rods are extendable into and retractable from corresponding



sockets on the rear side of the bucket in response to alternate pressurization of the center of the cylinders or the opposite ends of the cylinders, which is controlled by valve means at the operator's station.

3,705,657

METHOD OF STACKING AND DESTACKING BARRELS

Gerhard Arnemann, Vossbarg 41, D2080 Pinneberg, Germany

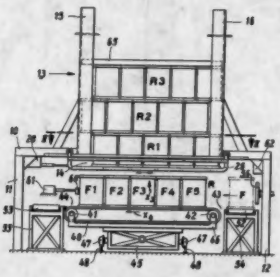
Division of Ser. No. 4,549, Jan. 21, 1970, Pat. No. 3,627,149.

This application March 25, 1971, Ser. No. 127,920

Claims priority, application Germany, Dec. 20, 1969, P 19 63 968.0

Int. Cl. B65g *57/30, 60/00*

U.S. Cl. 214—152 **1 Claim**



A method and an apparatus for stacking and destacking cylindrical as well as bulgy barrels which allow barrels to be stacked in several rows one on top of the other and to remove the rows of barrels one row after the other again. The apparatus includes a support frame with a storage bay for receiving the barrels. The storage bay includes a bottom feed and discharge opening through which several barrels which have been aligned in a row on a conveyor may be introduced into the bay. Means are provided for feeding the barrels to the feed and discharge opening, for aligning the barrels in a predetermined position, for lifting the barrels into the storage bay and for retaining the barrels within the bay.

3,705,658

CARPET ROLL CARRIER ATTACHMENT

Hugh A. Harris, 3011 Citation Dr., Dallas, Tex.

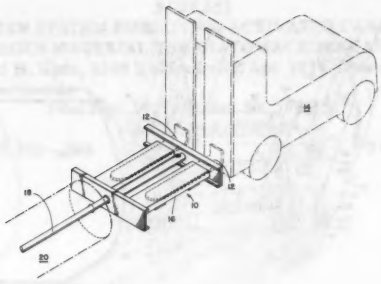
Filed Dec. 29, 1970, Ser. No. 102,423

Int. Cl. B66f *9/12*

U.S. Cl. 214—620 **1 Claim**

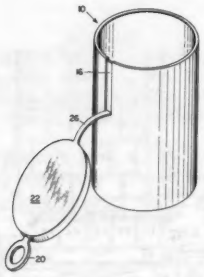
A device for use in attaching a carpet rod to a transport vehicle having forks, characterized by the use of a frame

which has socket means into which the forks of the transport vehicle can be horizontally positioned so that the device can



be supported by and retained on the forks of the transport vehicle while the carpet rod is inserted into the center of a carpet roll and used to lift and transport the carpet roll.

3,705,659
ERODABLE MATERIAL
William L. Mackie, 394 Court Avenue, Ventura, Calif.
Filed Sept. 18, 1970, Ser. No. 73,469
Int. Cl. B32b 27/08; B65d 23/00
U.S. Cl. 215—1 C **4 Claims**



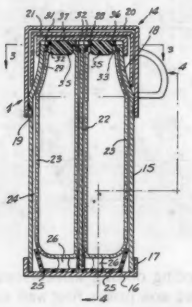
An improved material useful for a multitude of purposes which will dissolve or degrade in a short period of time when exposed to water, water vapor or sunlight. The material includes an intermediate layer of water soluble thermoplastic material with a layer of polyethylene film on both sides thereof. When the material is exposed to normal atmospheric conditions, the intermediate water soluble layer will ultimately dissolve. The thin outer and inner layers will degrade to a powdery film.

3,705,660
MOLDED DRINKING RECEPTACLE
Elvin M. Bright, 17242 Bircher Street, Granada Hills, Calif.
Filed July 27, 1971, Ser. No. 166,348
Int. Cl. B65d 11/02
U.S. Cl. 215—1 C **26 Claims**

An article of manufacture comprising a drinking receptacle molded of non-metallic material and having the general shape of a bovine horn. The main body is preferably molded in two hollow parts each having a closed end, the smaller part being fixed to the side of the smaller end of the larger part and suitably patterned for esthetic effect. A hand grip is fixed to the main body on the side opposite the smaller part, and a sup-

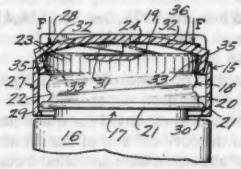
port rest or base for the receptacle may be fixed to the main body or shaped to internest with the latter.

3,705,661
MULTIPLE COMPARTMENT THERMALLY INSULATED CONTAINER
Peter J. Davis, 233 Adams Avenue, Camden, Ark.
Filed Feb. 20, 1970, Ser. No. 12,976
Int. Cl. B65d 1/04
U.S. Cl. 215—6 **6 Claims**



A double compartment thermally insulated container for two different beverages, the container consisting of a cylindrical housing with a central diametrical partition wall, with two semi-cylindrical beverage receptacles supported therein in the respective semi-cylindrical compartments of the housing, with sealed air spaces provided around the receptacles. A modified form of the invention consists of two cylindrical thermally insulated containers connected together in axial alignment by a connection sleeve.

3,705,662
SAFETY CLOSURE FOR MEDICINE BOTTLES AND THE LIKE
Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastic Corporation, Evansville, Ind.
Filed July 28, 1971, Ser. No. 166,696
Int. Cl. A61j 1/00
U.S. Cl. 215—9 **10 Claims**



The invention is a closure for a medicine bottle or the like which requires a special operation to open. The closure is

placed on, for example, a medicine bottle having a threaded neck. The closure includes an inner cap having threads adapted to engage with the threaded bottle neck. A plurality of vertical ribs are provided on the exterior sidewall of the inner cap. An overcap is positioned over the inner cap. The overcap includes at least one flexible portion movable toward the inner cap ribs. A series of mating ribs are provided on the flexible portion adjacent the inner cap ribs. To remove the closure, the flexible portion is depressed causing the adjacent ribs to mate. Rotation of the overcap, after such depression of the flexible portion, transfers force to the inner cap and the closure can be removed from the bottle.

3,705,663

COLLAPSIBLE BULK HANDLING BIN

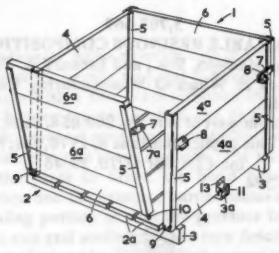
Dudley J. Schubert, Baranduda, via Wodonga, and Donald R. Howe, Morell Street, Mooroopna, both of Victoria, Australia

Filed Nov. 30, 1970, Ser. No. 93,695

Claims priority, application Australia, Nov. 27, 1969, 64418/69; Feb. 20, 1970, 378/70

Int. Cl. B65d 9/12

U.S. Cl. 217—12 R **3 Claims**



A rectangular collapsible bulk handling bin having a palletized base in which at least one pair of opposite walls are secured to the base as by easily releasable interlocking means the interlocking means at least strongly securing the said pair of walls against outward thrust, the other pair of opposite walls being secured to the base or the first pair of opposite walls as by peg and socket means the adjacent walls being interconnected at the top the combination being simply assembled or disassembled the assembled bin being strongly secure against at least outward thrust on the walls produced by weight of contents.

3,705,664

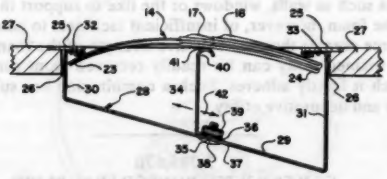
DISPENSING DEVICE FOR POCKETED ENVELOPES

James E. Ferris, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed April 16, 1971, Ser. No. 134,787

Int. Cl. B43m 3/00

U.S. Cl. 221—47 **6 Claims**



An envelope dispenser for uniformly retaining and flexing pocketed envelopes in a manner which automatically maintains the envelope pockets sufficiently open for efficient insertion of material therein. An adjustable support, slidably mounted beneath the envelopes in the dispenser, applies appropriate flexing force thereto and, in addition, makes it possible for the dispenser to satisfactorily accommodate different types of envelopes therein.

3,705,665

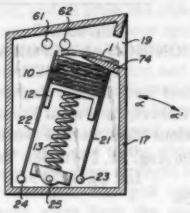
SINGLE-COPY VENDING MACHINES FOR NEWSPAPERS

Thomas Gunzler, 1261 Alicia Ave., Teaneck, N.J.

Filed June 8, 1970, Ser. No. 44,274

Int. Cl. G07f 11/48

U.S. Cl. 221—188 **10 Claims**



A single-copy vending machine for flat articles, such as newspapers, in which the items to be sold are stacked horizontally on a tray and so positioned, by means of a spring motor and a fixed stop, that the parting line between the topmost item in the stack and one immediately below always lies in a predetermined horizontal plane. A separating blade is arranged to move relative to the stack of items in the parting plane and is used to separate the topmost item from the remainder of the stack and make it available for removal from the stack by a purchaser. The blade, simultaneously with the separation of the topmost item, also locks the item second from the top of the stack in an inaccessible position for the purchaser.

3,705,666

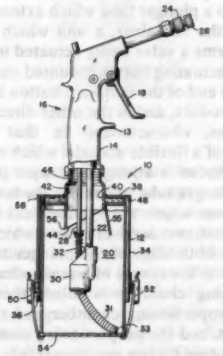
APPARATUS FOR PERFORATING AND OPENING A CAN OF LIQUID AND FOR SEALING THE OPENED CAN AGAINST LEAKAGE WHILE COUPLING A DISPENSER TO THE OPENED CAN

Evan S. Nelson, Iron Mountain, and Charles J. Nelson, Kingsford, both of Mich., assignors to The Nelson Company, Iron, Mich.

Filed Feb. 11, 1970, Ser. No. 10,370

Int. Cl. B67b 7/26

U.S. Cl. 222—82 **4 Claims**



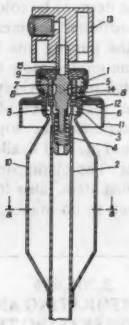
An apparatus for perforating and opening a can of liquid and for sealing the opened can against leakage while coupling a dispenser to the opened can. The apparatus includes a guiding receptacle for the can to be opened connected to a perforator to open the can of the can from which it is desired to dispense liquid. The perforator pushes a portion of the perforated top aside to provide an opening into the can of substantial size, and also, the perforator serves as a conduit communicating with the interior of the can. A sealing means surrounds the perforator for making sealing contact with the can top around the opening to prevent leakage of the liquid

therefrom. Fastening means is positioned on the receptacle for engagement with the can for holding the top of the can firmly against the sealing means and a screw coupling is aligned with the perforator conduit for mounting thereto aligned dispenser preferably having an eccentrically positioned intake for withdrawing liquid in the lowest corner of the can.

3,705,667
PROPORTIONING VALVE FOR A PRESSURIZED DISPENSER

Marie Jean Michel Paul Blanie, Paris; Jean Ramis, Yvelines and Henry R. Robert, Paris all of France, assignors to Societe Civile d'Inventions Idees, Paris, France

Filed Aug. 31, 1970, Ser. No. 68,307
Int. Cl. B67d 5/52
U.S. Cl. 222—136 5 Claims



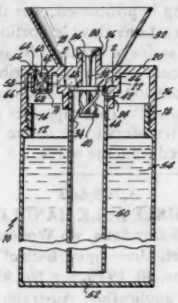
A proportioning valve for a container holding a product which is to be dispensed in predetermined quantities with each operation of the valve under the influence of a compressed fluid, said valve essentially comprising a body having a cylinder which opens on one side on the outside and on the other hand onto a plunger tube which extends almost as far as the bottom of the container, a unit which is slidable in the cylinder and forms a valve being actuated in one direction by depressing the actuating button mounted on the outside of the container at the end of the unit, said button having a nozzle for expelling the product, and in the other direction by a resilient resetting means, characterized in that a proportioning chamber made of a flexible material which opens into the side wall of the cylinder is arranged at least partially along the length of the plunger tube to enclose the latter, and is formed by two dihedrons which are symmetrical in relation to the plunger tube and two semi-cylinders which are capable of bearing against both sides of the plunger tube, the assembly being such that in the course of a push-release working cycle, the proportioning chamber is filled, then communication between the proportioning chamber and the interior of the container is cut, and the proportioning chamber and the nozzle of the actuating button are connected, the proportioning chamber being deflated and evacuated of its contents under the pressure of propellent fluid in the container.

3,705,668
DISPENSER WITH DIP TUBE

Gilbert Schwartzman, 20 Wilmot Circle, Scarsdale, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,705
Int. Cl. B65d 37/00
U.S. Cl. 222—207 3 Claims

A dispenser comprising a squeezable container having a normally closed valve for preventing feed back of liquid being dispensed from the container and including means mounting the valve in association with a measuring cup at the top of the

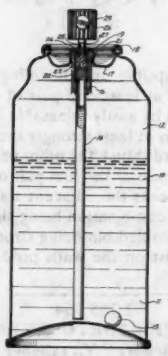


container and a dip tube which extends from the top substantially throughout the length of the container.

3,705,669
FOAMABLE RESINOUS COMPOSITION

Robert P. Cox, Madison, Wis., and Leonard A. Fish, Chicago, Ill., assignors to Wham-O Manufacturing Company, San Gabriel, Calif.

Continuation-in-part of Ser. No. 860,854, Sept. 24, 1969, abandoned. This application June 8, 1970, Ser. No. 44,529
Int. Cl. C08f 47/10, 29/46
U.S. Cl. 222—394 14 Claims



A pressurized or "aerosol" can containing a composition of matter for producing a string of plastic foam is described. The plastic foam produced from the aerosol can is in the form of a cohesive plastic body sufficiently tacky to adhere to inert surfaces such as walls, windows or the like to support the weight of the foam, however, of insufficient tackiness to adhere with a force greater than the cohesive strength of the foam so that the foamed body can be readily removed from surfaces to which it lightly adheres. Such a combination has substantial play and decorative utility.

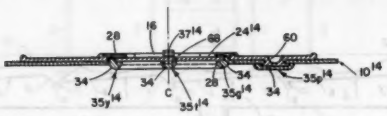
3,705,670
CAN END WITH BONDED SEAL SLIDE

Donald L. Douty, Franklin Township, County of Westmoreland, Pa., assignor to United States Steel Corporation

Division of Ser. No. 146,945, May 26, 1971, which is a division of Ser. No. 61,384, Aug. 5, 1970, Pat. No. 3,622,055. This application Jan. 28, 1972, Ser. No. 221,548
Int. Cl. B65d 47/10
U.S. Cl. 222—541 63 Claims

A can end is provided with a pour opening having a pour width. The pour opening is provided with an entry aperture at

one end of the pour opening. The entry aperture has a slide width greater than the pour width. The can end has a can end lapping portion and a can end sealing portion adjacent the pour opening and a plane of bulge strength adjacent the entry aperture. A slide has a pivot on the can end, is adapted to pass through the entry aperture and has a slide lapping portion and a slide sealing portion. The slide lapping portion is adapted to register with the can end lapping portion, and the slide sealing portion is adapted to register with the plane of bulge strength. A pull tab has a connection to the slide. Engaging means engage the can end lapping portion to press the can end lapping portion into intimate contact with the slide lapping portion and the slide sealing portion into intimate contact with the plane of bulge strength. A pressure barrier material is used for sealing the intimately contacting can end sealing portion and the slide lapping portion and also for sealing the intimately



contacting plane of bulge strength and the slide sealing portion. The pressure barrier material is bonded to the can end sealing portion with a first predetermined shear strength and to the slide lapping lapping portion and to the plane of bulge strength with a second predetermined shear strength less than the first predetermined shear strength. The pull tab is rotatable about the pivot to break the bond between the slide lapping portion and the pressure barrier material adjacent the can end sealing portion so that the pressure barrier material adjacent the can end sealing surface now functions as an exit and reclosure slide guide. The pull tab causes breakage of the bond between the pressure barrier material adjacent the plane of bulge strength and the slide sealing portion and causes the slide to move through the entry aperture on the pressure barrier material adjacent the plane of bulge strength and such pressure barrier material to act as a guide to uncover the pour opening.

3,705,671

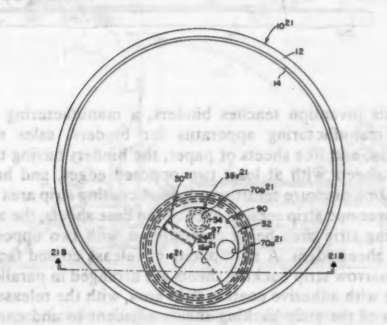
CAN END WITH BONDED SEAL SLIDE

Donald L. Douty, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation

Division of Ser. No. 146,945, May 26, 1971, which is a division of Ser. No. 61,384, Aug. 5, 1970, Pat. No. 3,622,055. This application Jan. 28, 1972, Ser. No. 221,571

Int. Cl. B65d *47/10*

U.S. Cl. 222—484 **34 Claims**



A can end provided with an opening and a can end sealing portion. A slide is disposed against the can end adjacent the opening, and is provided with a first pour opening. A stationary member is disposed against the slide and is provided with a second pour opening and a stationary member sealing portion. The slide has a slide sealing portion adjacent the second pour opening and is movable to a sealing position where the first pour opening does not overlap the second pour opening. A pull tab has a connection to the slide. Engaging means engage the can end and one of the slide and the stationary member to position the stationary member sealing portion adjacent the can end sealing portion, and to press the slide against the stationary member adjacent the second pour opening. A pressure barrier material is used for sealing the can end sealing portion to the stationary member sealing portion and the slide sealing portion to the stationary member adjacent the second pour opening. The pressure barrier material is bonded to the stationary member adjacent the second pour opening with a first predetermined shear strength and to the slide sealing portion with a second predetermined shear strength less than the first predetermined shear strength. The pull tab is movable to cause the slide to move away from the sealing position to break the bond between the slide sealing portion and the pressure barrier material adjacent the second pour opening. The pull tab then is movable to cause the first pour opening to overlap the second pour opening to uncover the second pour opening.

3,705,672

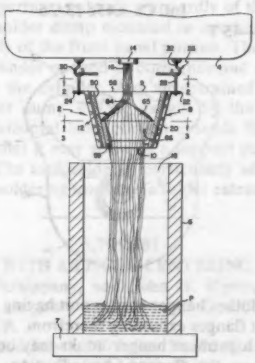
SPLASH ARRESTER HAVING PACT MEMBER SUPPORTED IN HOUSING

Robert A. Saxer, 12934 Linden Lane, Parma, Ohio

Continuation-in-part of Ser. No. 16,766, March 5, 1970. This application July 29, 1970, Ser. No. 59,044

Int. Cl. B22d *37/00*

U.S. Cl. 222—567 **14 Claims**



A splash arrester apparatus adapted for use in pouring molten metal into a mold including an open ended housing of refractory material adapted to encompass a stream of molten metal being poured into the mold. An impact member is supported by the housing being adapted to change the direction of flow of the molten metal as it passes through the housing. The impact member and housing define passageway means so constructed and arranged to change the shape of the entering molten metal stream into ribbon-like shaped streams to reduce the force of the molten metal striking the pool of metal contained in the mold.

3,705,673

COLLAPSIBLE GARMENT HANGER

John Markus Mohammar, Violstigen 4, 171 73 Solna, Sweden

Filed Oct. 13, 1970, Ser. No. 80,334

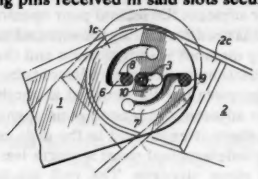
Claims priority, application Sweden, Oct. 17, 1969, 14296

Int. Cl. A47j *51/10*

U.S. Cl. 223—94 **6 Claims**

A garment hanger comprises two pivotable arms, a wire loop counteracting the pivot movement and simultaneously

serving as an operating member therefor and a hook secured to the wire loop. In the central portion of each arm there is provided means for locking the arms in the initial position, said locking means being adapted upon manipulation of the wire loop to take a release position, so that further manipulation of the wire loop will involve pivoting of the arms. The locking member comprises one or more slots in one arm and corresponding pins received in said slots secured to the other

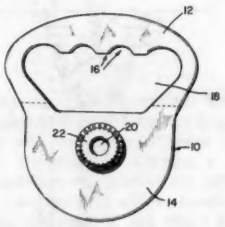


arm. Each said slot has differently shaped portions, i.e. one circular and one straight portion. One arm has, further, a central pin serving as pivot shaft, said pin being displaceable in a substantially straight central slot in the other arm. A strengthening member for the wire loop serves as a fastening means for the support hook. Each arm comprises a substantially flat portion and one upper edge projecting in opposite directions on the respective arms.

3,705,674
CLOTHES HANGER CARRIER

William M. Fisher, Burlingame Hill, Calif., assignor to Atlantic Merchandising Company, San Francisco, Calif.

Filed Oct. 12, 1970, Ser. No. 80,088
Int. Cl. A45c *13/26*
U.S. Cl. 224—45 T **1 Claim**

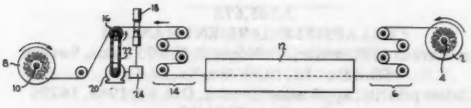


This is a clothes hanger carrier unit having a handle portion with resilient flanges extending therefrom. A holding member around which garment hanger hooks may be engaged is provided between the flanges. An adjusting nut permits the flanges to be drawn together to tightly grip the garment hanger hooks to prevent their disengagement from the carrier.

3,705,675
LATERAL POSITIONING OF MOVING FIBROUS MATERIALS

Michael J. Ram, West Orange, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Aug. 4, 1971, Ser. No. 168,879
Int. Cl. B65h *25/26*
U.S. Cl. 226—3 **10 Claims**

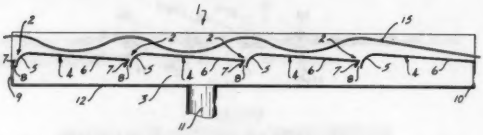


A process and apparatus are provided for laterally positioning at a relatively fixed location a continuous length of fibrous material which is moving substantially in the direction of its length and which is free to undergo lateral movement. The fibrous material possesses a twist of at least about 0.1 tpi, and preferably comprises a plurality of parallel twisted multifilament fiber bundles which are in the form of a ribbon. The lateral position of the fibrous material is sensed and its relatively fixed location is maintained through contact (e.g. tangential contact) with a variably rotating roller.

3,705,676
AIR FOIL CONVEYOR

William F. Overly, Winneconne, and Kenneth J. Pagel, Neenah, both of Wis., assignors to Overly, Inc., Neenah, Wis.

Filed March 16, 1970, Ser. No. 19,687
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 **5 Claims**

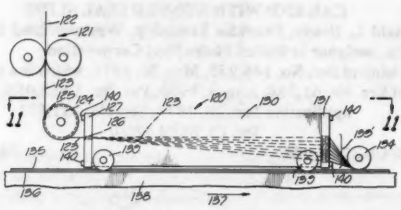


A common plenum supplies air to a plurality of parallel air foil nozzles disposed in tandem and operative upon a sheet of material adjacent to the nozzle to convey the sheet relative thereto.

3,705,677
RECEIPT BINDERS

John Leslie Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif., and John Leslie Jones, Jr., 1447 Sutherland Street, Los Angeles, Calif.

Division of Ser. No. 799,887, Feb. 17, 1969, Pat. No. 3,620,891, which is a continuation-in-part of Ser. No. 567,595, July 25, 1966, abandoned. This application Nov. 15, 1971, Ser. No. 198,693
Int. Cl. B65h *23/28*
U.S. Cl. 226—196 **1 Claim**



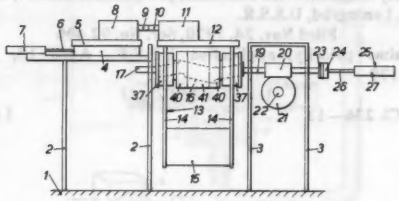
This invention teaches binders, a manufacturing process and manufacturing apparatus for binders, sales receipts, checks, and like sheets of paper, the binders having thin film base sheets with at least two opposed edges, and having at least one pressure sensitive adhesive coating strip area extending over one strip section area of the base sheets, the adhesive coating strip area being coterminous with two opposed film base sheet edges. A multiplicity of release coated face, flexible, narrow strip backing sheets are arranged in parallel alignment with adhesive coating strip area, with the release coated faces of the strip backing sheets adjacent to and completely covering the adhesive coating strip area. The multiplicity of strip backing sheets are coterminous at their strip ends with the coterminous adhesive coating strip area and the opposed base sheet edges. A single receipt sheet or the like is secured to a single narrow adhesive coating area, made available on the removal of a single strip backing sheet.

3,705,678

FRICTION WELDING APPARATUS

John Gilbert Searle, Hednesford, England, assignor to Allwood Searle & Timney Limited, Digbeth, Walsall, Staffordshire, England

Filed Nov. 18, 1970, Ser. No. 90,685
Claims priority, application Great Britain, Nov. 19, 1969, 56,525/69
Int. Cl. B23k 27/00
U.S. Cl. 228—2 6 Claims



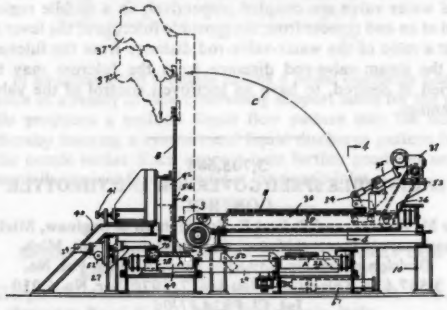
In friction welding apparatus for welding two components together one component is rubbed against the other to produce frictional heat and follows a substantially circular path without rotation. This movement is derived from a follower coupled to a rotor which rotates about a given axis but has a longitudinal axis which is inclined to and intersects the rotational axis. The longitudinal axis thus generates a cone. When the follower is spaced from the apex of the cone it moves in a circular path without rotation and causes complementary movement of one component, but when it is aligned with the apex it no longer moves, even if the rotor continues to rotate, and enables that component to remain stationary while welding is effected. In one embodiment the rotor moves axially of its rotational axis relatively to the follower, while in another embodiment one end of the rotor rotates in a circle of fixed diameter while the apex of the cone is movable in and out of alignment with the follower, which is fixed relative to the rotating end of the rotor.

3,705,679

FORMING MACHINE FOR STRUCTURAL SECTIONS

Emerson J. Tenpas, Erie, Pa., assignor to Eriez Manufacturing Company, Erie, Pa.

Filed June 15, 1970, Ser. No. 45,983
Int. Cl. B23k 1/14, 37/04
U.S. Cl. 228—49 7 Claims



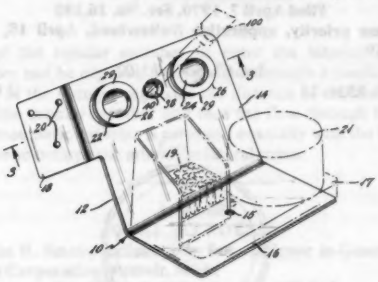
This specification discloses a machine for forming structural sections. Such sections are usually made of a web plate and one or more flange plates. These plates are brought together each in a horizontal plane onto two conveyors, the web plate above the flange plate. The web plate is then pivoted to a position in a vertical plane and brought to position on the flange plate. The flange plate is then welded, riveted or cemented to the web plate. The web is swung up by a shaft which has a clamp mechanism attached to it. The web plate is brought into position on the roller conveyor or overhead cranes and clamped in place, the shaft and mechanism is then rotated to lift the web plate from the rollers and to swing the web plate to vertical position over the flange plate. The assembly is then moved past a welder.

3,705,680

TOOL HOLDER

William Jordan Siegel, 9337 Fraser Street, Silver Spring, Md.

Filed June 8, 1970, Ser. No. 44,509
Int. Cl. B23k 1/00, 5/00
U.S. Cl. 228—57 5 Claims



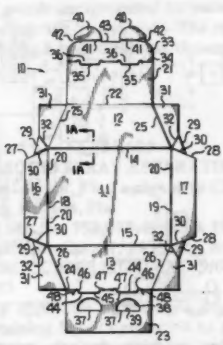
The disclosure relates to a tool holder bracket with a multi-apertured front panel portion. A tool holder cubby mounted in one of the apertures extends rearwardly of the front panel portion and a solder dump mounted in another aperture extends rearwardly of the front panel portion. The solder dump comprises a cylinder opened at both ends and a porous plug disposed inside the cylinder. Any air entrained solder blown down the solder dump will be caught by the porous plug. Desirably a horizontal base portion extends forward of the front panel so that it may serve as a support stand for a tool cleaning unit. The tool holder is particularly adapted for use with miniature soldering irons and a solder extractor.

3,705,681

CARTON WITH ARTICLE-CENTERING MEANS

Harry Rossi, Parsippany, and John H. Myers, Bergenfield, both of N.J., assignors to Continental Can Company, Inc., New York, N.Y.

Filed July 1, 1970, Ser. No. 51,421
Int. Cl. B65d 5/02, 85/00
U.S. Cl. 229—40 8 Claims



This disclosure relates to a carton adapted to be wrapped around an article and together therewith forms a compact

package. The blank from which the carton is constructed includes centering tabs disposed at corners of the top panel of the blank for urging an article into centered overlying relationship with the top panel upon folding of the blank around the article to form a package therewith. The carton includes inner and outer bottom-forming panels having cooperating latching means including easy-opening locking tabs. A portion of one of the bottom-forming panels serves as finger-gripping means for releasing the latching means.

3,705,682

APPARATUS FOR SEPARATING CRYSTALS FROM A MELT

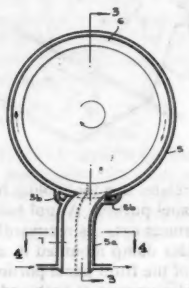
Hans-Joachim Schultze, Chur/Grisons, Switzerland, assignor to Inventa AG, Zurich, Switzerland

Filed April 7, 1970, Ser. No. 26,195

Claims priority, application Switzerland, April 18, 1969, 5875/69

Int. Cl. B04b *15/02*

U.S. Cl. 233—11 **3 Claims**



Method and apparatus for purifying organic substances which form crystals and melt without decomposition by use of centrifuge which includes heating of the discharge channels above the melting point of the substance to prevent crust formation.

3,705,683

PUNCHER FOR MARKING DEVICES

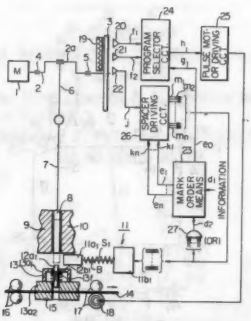
Kazunobu Tsukihashi, No. 168, Shirahata Kami-cho, Yokohama, Japan

Filed May 27, 1971, Ser. No. 147,361

Claims priority, application Japan, June 3, 1970, 45/48219

Int. Cl. G06k *1/02*

U.S. Cl. 234—87 **5 Claims**



A puncher for marking devices, consisting of single reciprocating press ram, a line of punch pins aligned below the press ram with a spacing therefrom. Spacers are selectively inserted between the press ram and the corresponding punch pins, for depressing those punch pins by the press ram which face the spacers thus inserted, for punching a sheet-like material. By controlling the spacers, a plurality of mark holes are bored at a time. The material to be punched may be fed slowly during the actual punching of mark holes, but quickly for spaces between marks.

3,705,684

STEAM PRESSURE AND TEMPERATURE REDUCING INSTALLATION

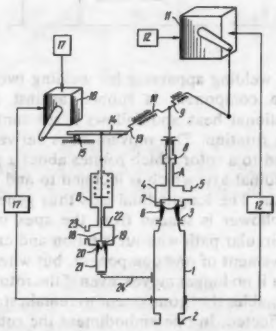
Anatoly Alexandrovich Schetinin, prospekt Metallistov, 18, kv. 74, Leningrad, U.S.S.R.

Filed Nov. 24, 1970, Ser. No. 92,406

Claims priority, application U.S.S.R., April 13, 1970, 1420179

Int. Cl. G05d *23/13*

U.S. Cl. 236—12 **1 Claim**



An apparatus for delivering pressure-reduced and temperature-reduced steam has a container with steam and water inlets and an outlet. A steam valve and a water valve, each having an operating rod are provided at the steam and water inlets respectively. An elongated lever supported on a movable fulcrum at one end and articulatedly coupled to a driving means at the other end is provided to actuate the operating rods of the steam valve and the water valve so as to control their openings. The apparatus has a pressure regulator to which the driving means is sensitive. A second driving means which is sensitive to a temperature regulator which regulates the temperature in the container is provided to move the fulcrum point along the length of the rod. The rods of the steam valve and water valve are coupled respectively in a middle region and at an end remote from the movable fulcrum of the lever so that a ratio of the water-valve-rod distance from the fulcrum to the steam-valve-rod distance from the fulcrum may be varied as desired, to have an improved control of the valve openings.

3,705,685

ENGINE IDLE SPEED GOVERNOR AND THROTTLE CONTROL

Lee M. Brewer, and Robert P. Rohde, both of Saginaw, Mich., assignors to General Motors Corporation, Detroit, Mich.

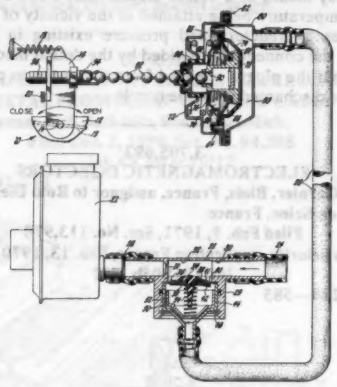
Division of Ser. No. 739,691, June 25, 1968, Pat. No. 3,537,433. This application Jan. 7, 1970, Ser. No. 6,010

Int. Cl. F02d *31/00*

U.S. Cl. 236—93 **2 Claims**

An engine idle speed governor arranged in a preferred embodiment to be operated by hydraulic pressure developed by restricting the power steering pump return flow line. A hydraulic diaphragm actuator motor operates the throttle and incorporates a dashpot to provide a throttle return check operative after manual actuation of the throttle. A control unit in the power steering pump circuit incorporates the restrictive

orifice as well as various valves and mechanisms to provide governor damping, limit throttle opening travel upon oil flow



failure and hold a fast idle position during cold starting and warm-up.

3,705,686

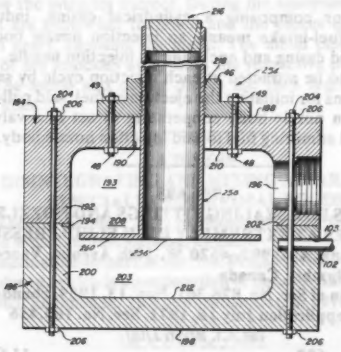
FLOW CONTROLLING SUPPORT BASE FOR ORNAMENTAL FOUNTAINS

John O. Hruby, Jr., Burbank, Calif., assignor to Rain Jet Corp., Burbank, Calif.

Filed Nov. 9, 1970, Ser. No. 87,886

Int. Cl. B05b *17/08*

U.S. Cl. 239—22 **21 Claims**



In an ornamental fountain having a liquid discharge nozzle, each of a family of flow controlling support bases for the nozzle produces a uniform liquid flow pattern into the nozzle thereby insuring a symmetrical liquid discharge pattern from the nozzle outlet. Each support base further produces an essentially laminar flow of liquid at the nozzle inlet.

3,705,687

SPRAYING DEVICE, MORE PARTICULARLY FOR ABRASIVE LIQUID COMPOSITIONS

Giorgio Vicentini, and Giulio Console, both of Turin, Italy, assignors to Boeri di A.G. Boeri & C., Turin, Italy

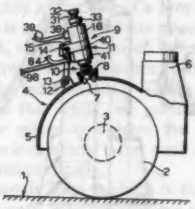
Filed June 18, 1971, Ser. No. 154,375

Claims priority, application Italy, June 25, 1970, 69198 A/70

Int. Cl. B05b *1/30*

U.S. Cl. 239—92 **4 Claims**

A membrane gun for spraying abrasive liquids has a membrane supported around its full periphery in a chamber in the body of the membrane gun, a first surface of the membrane forming a wall of this chamber. A tubular member is supported in the chamber with a free end facing the membrane. A second surface of the membrane is acted on variably by a composite plunger of a single-acting pneumatic cylinder. The liquid is admitted to the chamber and must pass over the free



end of the tubular member to enter the interior of their member and be expelled from the gun through a nozzle. Regulation of the plunger regulates the distance of the membrane from the tubular member and thus the flow through the gun. The pneumatic cylinder is arranged coaxially with the body of the gun to occupy the minimum lateral space.

3,705,688

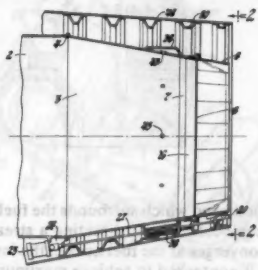
OVAL JET NOZZLE

Charles H. Smale, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 7, 1971, Ser. No. 178,041

Int. Cl. B64c *15/06*

U.S. Cl. 239—265.39 **4 Claims**



A variable jet propulsion nozzle of the multiflap type is characterized by an oval cross-section of the nozzle. The nozzle is reinforced against the effect of pressure tending to deform it toward a more nearly circular cross-section by a hollow reinforcing ring pressurized from within the exhaust duct. The nozzle has an ovate polygonal actuating ring for moving the flaps of the nozzle reciprocated by power cylinders coupled to the actuating ring by pull rods. The reinforcing ring includes tubes defining a sealed-off way through the reinforcing ring for the pull rods.

3,705,689

LIQUID SPRAY APPARATUS

Arron Lee, Miami Beach, Fla., assignor to Chemair Corporation of America, Hialeah, Fla.

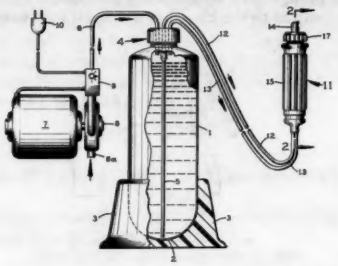
Continuation of Ser. No. 788,678, Dec. 14, 1968, abandoned. This application Oct. 27, 1970, Ser. No. 84,495

Int. Cl. B05b *7/32*; F23d *13/04*

U.S. Cl. 239—337 **11 Claims**

A liquid spray apparatus including a hermetically sealed container for retaining liquid connected to a source of pressurized air or other gas for propelling the liquid from an outlet in the container and a hand operated spray gun having a normally closed finger operated valve terminating in a spray nozzle. A flexible tube connecting the liquid outlet of the con-

tainer to the liquid inlet of the valve. An auxiliary tube connecting the source of air or other gas to the liquid channel in



the valve through a metering orifice for atomizing the liquid into spray from the nozzle when the valve is operated.

3,705,690

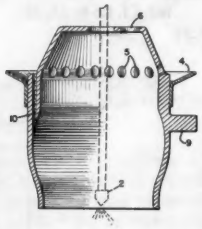
COMBUSTION HEADS

Joseph W. Brown, 5051 Walton Avenue, Philadelphia, Pa.

Continuation-in-part of Ser. No. 115,969, Feb. 17, 1971, abandoned. This application April 17, 1972, Ser. No. 244,673

Int. Cl. F23d *11/38*

U.S. Cl. 239—424.5 **5 Claims**



A combustion head which surrounds the fuel nozzle in an oil burner, the combustion head directing a stream of air into a cone which converges at the fuel nozzle; the inside of the combustion head is contoured to achieve maximum air velocity at the plane of fuel injection.

3,705,691

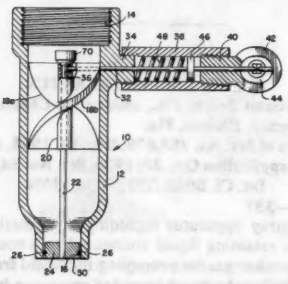
DISCHARGE HEAD UTILIZING A PRESSURE-RESPONSIVE DETENT MECHANISM

Karol R. Zenker, Needham, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed Sept. 8, 1971, Ser. No. 178,734

Int. Cl. B05b *1/32*

U.S. Cl. 239—452 **14 Claims**



A pressure responsive discharge head wherein the expellable plug is disposed in the outlet of a body member having an inlet adapted for connection to a source of fluid under pressure, with the plug being connected relative to the body member by means of a detent mechanism. Upon a predetermined temperature being attained in the vicinity of the head, as well as a predetermined pressure existing in the body member, the connection provided by the detent mechanism is broken and the plug is released from the outlet to permit the fluid to be discharged from the nozzle.

3,705,692

ELECTROMAGNETIC INJECTORS

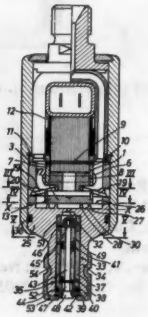
Georges Garnier, Blois, France, assignor to Roto Diesel Clichy, Hauts-de-Seine, France

Filed Feb. 9, 1971, Ser. No. 113,978

Claims priority, application France, Feb. 13, 1970, 7005124

Int. Cl. B05b *1/32*

U.S. Cl. 239—585 **9 Claims**



An injector comprising a cylindrical casing, induction means and fuel-intake means, an injection nozzle body attached to said casing and enclosing an injection needle, a pallet adapted to be attracted at each injection cycle by said induction means for initiating the ejection of fuel, said pallet and said injection nozzle body cooperating to act as a valve for stopping and admitting fuel to said injection nozzle body.

3,705,693

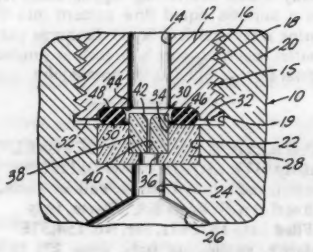
MEANS FOR SEALING FITTINGS AND NOZZLE ASSEMBLIES AT EXTREMELY HIGH FLUID PRESSURES

Norman Franz, Apt. 902, 4620 W. 10th Avenue, Vancouver, British Columbia, Canada

Continuation of Ser. No. 876,301, Nov. 13, 1969, abandoned. This application July 16, 1971, Ser. No. 163,456

Int. Cl. B05b *1/00*

U.S. Cl. 239—600 **11 Claims**



Means for sealing joints subjected to extremely high fluid pressures in the order of 70 thousand pounds per square inch wherein an elastic member is provided which is disposed between and initially subjected to moderate mechanical pres-

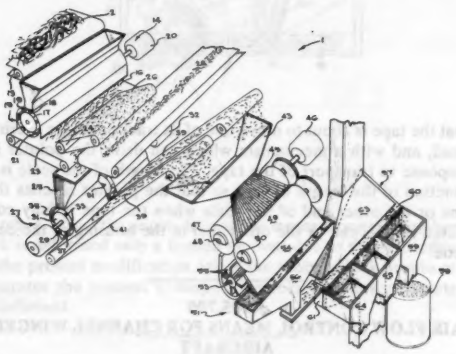
sure by the components of the joint to be sealed and subsequently subjected to extremely high fluid pressure whereby the elastic member is deformed between the components of the joint so as to seal the joint against leakage.

3,705,694

METHOD OF AND AN APPARATUS FOR RECLAIMING METAL FROM SCRAP WIRE AND CABLE

John L. Slocum, 518 Parkdale, Rochester, Mich.

Filed Dec. 2, 1970, Ser. No. 94,385
Int. Cl. B02c *19/12*
U.S. Cl. 241—14 **14 Claims**



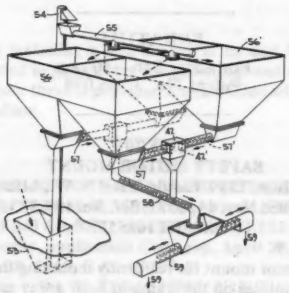
An apparatus and a method for reclaiming scrap metal from insulated cables or wires. The insulated wires are chopped into short lengths and subjected to high squeezing pressure between a pair of hard surfaces to crush the casings and destroy the integrity thereof. During the squeezing, the metal pieces are somewhat flattened and the pieces of casing are forced apart, exposing the metal. The metal pieces then fall away or are knocked away from the respective pieces of casing. The metal and casing pieces are then segregated from each other.

3,705,695

DISINTEGRATING AND MIXING APPARATUS ESPECIALLY FOR ANIMAL FOODS

Bela Thomas Sandor, Ayr, Scotland, assignor to Automated Feed Mills Limited, London, England

Continuation-in-part of Ser. No. 871,617, Nov. 10, 1969, abandoned, which is a continuation of Ser. No. 665,843, Sept. 6, 1967, abandoned. This application Oct. 6, 1970, Ser. No. 78,379
Int. Cl. B02c *23/02*
U.S. Cl. 241—34 **12 Claims**



An apparatus for grinding and mixing animal or other food stuff ingredients, including one or more storage silos, metering augers associated therewith for feeding a measured batch of grain to a feed bin and therethrough to grinders such as hammer mills from which the ground ingredients are fed directly into a mixer. A metered batch of additives which do not require grinding is also fed directly into the mixer.

The entire plant is automatically controlled so as to empty the mixer automatically at the end of a proper mixing period and, when the mixer is empty, to initiate or permit the measuring of the next batch, so that one batch follows another automatically until a desired quantity has been mixed.

Two mixers may be fed alternately from a single grinder or group of grinders so that while one mixer takes in the ingredients, the other mixer completes the mixing and the discharge of the previous batch. After each cycle the role of the mixers changes automatically.

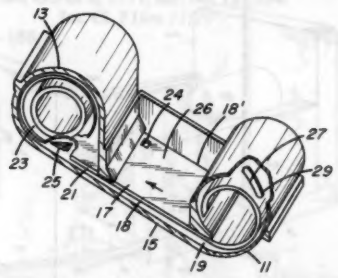
In each case the supply from the silos to the feed bin of the grinder is prevented until both the feed bin and the mixer, to which the meal will be directed, are empty.

3,705,696

FILMSTRIP AND FILMSTRIP RETENTION DEVICE

Evan A. Edwards, Pittsford, and Richard H. VanDuzer, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 15, 1971, Ser. No. 198,539
Int. Cl. G03b *1/04*
U.S. Cl. 242—71.2 **13 Claims**



An elongate strip of web material arranged for advancement through a web guiding mechanism, such as a film cartridge, carries a perforation defining an elongated edge that is skewed with respect to the longitudinal axis of the strip. The cartridge includes a protrusion situated to engage initially the skewed edge to stop the advance of the web. Attempts to further advance the web will cause the web face adjoining the skewed edge to conformably engage an undercut surface of the protrusion to prevent further advancement without tearing the web.

3,705,697

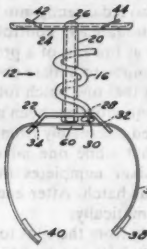
SCUBA DIVING REEL

Verdun P. Chagnon, 26354 Ridgemont, Roseville, Mich.

Filed Dec. 24, 1970, Ser. No. 101,280
Int. Cl. B65h *17/46*
U.S. Cl. 242—85 **15 Claims**

An improved reel for carrying line in a convenient manner when scuba diving or skin diving. The reel straps securely about the forearm of a diver preferably wearing a wet-suit and is positioned to be easily unwound or rewound in full view of the diver. Cleating or wedging means are included to fix the

unwound line at any length either prior to diving or when the desired depth has been attained. Features of the reel when attached to the arm of the diver allow it to be re-wound or unwound and secured solely with the use of the diver's other arm.

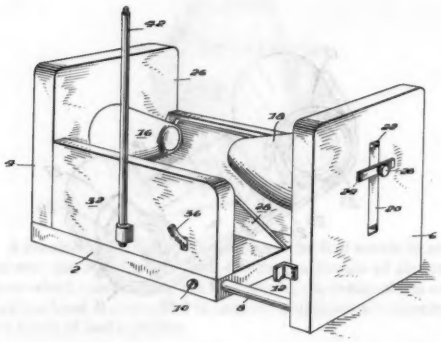


3,705,698

PAYOUT STAND FOR UNIVERSAL TYPE WINDS WITH RADIAL OPENING FOR FEEDOUT

James W. Newman, Scarsdale, N.Y., and Ronald E. Zajac, Yonkers, N.Y., assignors to Windings, Inc., Yonkers, N.Y.

Filed May 24, 1971, Ser. No. 146,208
Int. Cl. B65h *49/00*
U.S. Cl. 242—129.51 5 Claims



A payout stand for holding windings of the universal type having a radial opening into the axial opening through which the inner end of the material is brought out includes a V-shaped cradle in which the wind can be laid and a pair of tapering guiding members which in use project into the ends of the axial opening within the package almost up to the central plane thereof and guiding the loops being withdrawn from the inside of the package and preventing or reducing bird-snesting of the flexible material being withdrawn.

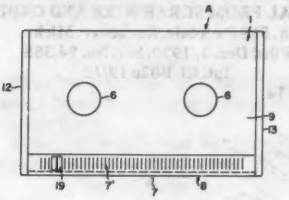
3,705,699

TAPE RECORDER AND CASSETTE FOR MAGNETIC TAPE

Imre Siller, Nuremberg, Germany, assignor to Grundig E.M.V., Elektro-Mechanische & Versuchsanstalt, Furth/Bay, Germany

Filed Feb. 4, 1970, Ser. No. 8,643
Claims priority, application Germany, April 16, 1969, G 69 15 105.9; Feb. 8, 1969, G 69 05 057; Feb. 7, 1969, G 69 04 673; March 20, 1969, G 69 11 147; March 18, 1969, G 69 10 787; April 16, 1969, G 69 15 105
Int. Cl. G11b *23/00*
U.S. Cl. 242—199 8 Claims

A cassette for magnetic tape which is provided with a scale and a pointer movable along the scale to indicate the length of that portion of tape which has been transported past or is yet to move past a recording or reproducing head in a tape recorder. The scale can be illuminated to facilitate reading in darkness and can be designed to be visible from one, two or three sides of the housing of the cassette. The tape recorder is provided with means for producing optical signals to indicate



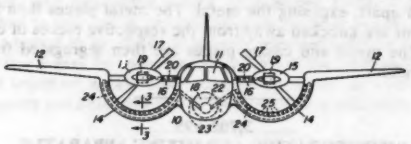
that the tape is about to move one of its tracks past the erasing head, and with a mechanism which can drive the pointer in response to transport of the tape. The length of the scale is a function of the length of tape so that the pointer reaches the one or the other end of the scale when the tape is fully collected on the one or the other reel in the housing of the cassette.

3,705,700

AIR FLOW CONTROL MEANS FOR CHANNEL WINGED AIRCRAFT

Willard R. Custer, 1905 W. Washington Street, Hagerstown, Md.

Continuation-in-part of Ser. No. 838,413, July 2, 1969, abandoned. This application Oct. 23, 1970, Ser. No. 83,326
Int. Cl. B64c *3/32*
U.S. Cl. 244—13 2 Claims



An apparatus for use with channel winged aircraft to seal the airfoil surface of the channel between the trailing edge thereof and the propeller tip, by discharging jets of water rearwardly from the leading edge of the airfoil surface of the channel to form a film of water on said surface. The film of water seals the space between the propeller tip traveling at or near the speed of sound and the channel surface where very low pressure is created just ahead of the propeller tip, so as to prevent spillback of air through this space.

ERRATUM

For Class 246—40 see:
Patent No. 3,706,098

3,705,701

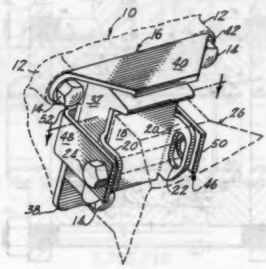
SAFETY MOTOR MOUNT

Theodore C. Hunt, 1109 Tumlin Street N. W., Atlanta, Ga.

Filed Nov. 11, 1971, Ser. No. 197,813
Int. Cl. F16m *5/00*
U.S. Cl. 248—9 3 Claims

A safety motor mount for resiliently mounting the engine of certain automobiles on the frame in such a way as practically to eliminate the chance of complete detachment of the mount which may cause jamming of the accelerator or other serious difficulties. The existing motor mount which comprises a U-shaped base on which is attached a block of rubber bonded

thereto and also having bonded thereon a steel plate has been modified to include another, larger U-shaped member passing around the outside of the motor mount and being held in place by the same bolt which passes through the original U-shaped



member. When the engine lifts on the motor mount the rubber lock is deformed only a limited amount due to the restriction of the present modification and if the rubber block breaks or separates the present U-shaped member prevents complete detachment.

3,705,702

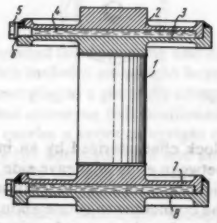
VIBRATION-ABSORBING SUPPORT

Viktor Grigorievich Podolsky; Iosif Mikhailovich Balkarei, and Sergei Mikhailovich Grigoriyants, all of Kharkov, U.S.S.R., assignors to Prodktny I Nanchno-Isslidovatelsky Institut, Kharkov, U.S.S.R.

Filed July 14, 1971, Ser. No. 162,351

Int. Cl. F16f *15/00*

U.S. Cl. 248—20 **1 Claim**



A support including a rod having at its end faced elastic disks connected in pairs along the perimeter and made so that within each pair there is provided a space filled with an incompressible medium.

3,705,703

STAND WITH CARRYING DEVICE

Curt Niggeloh, Fichtenhof, 5608 Radevorwald, Germany

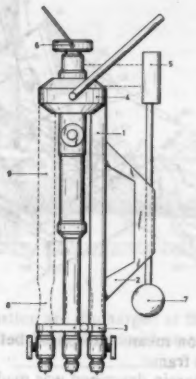
Filed April 27, 1970, Ser. No. 32,132

Claims priority, application Germany, April 28, 1969, G 69 17 159; Nov. 28, 1969, G 69 46 137.6

Int. Cl. F16m *11/06, 11/38*

U.S. Cl. 248—168 **11 Claims**

A stand, particularly for photo- or film-cameras, which comprises at least one leg including profiled tubes, telescope-like displaceable into each other and capable of being clamped together relative to each other. A stand-head is pivotally connected with the tubes, and one of a carrying grip



and of a carrying loom disposed on the leg and comprises the same working material as that of the stand leg.

3,705,704

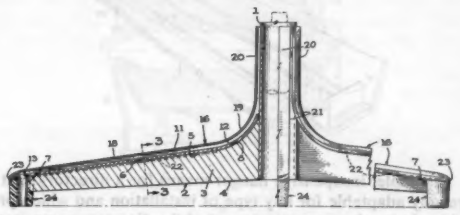
CHAIR BASE

Melvin A. Textoris, Struthers, Ohio, assignor to The General Fireproofing Company, Youngstown, Ohio

Filed March 8, 1971, Ser. No. 121,854

Int. Cl. F16m *11/20*

U.S. Cl. 248—188.7 **9 Claims**



A chair base includes a vertical column from which radiate a plurality of legs each having a top plate and a caster-receiving socket adjacent its distal portion. An end cap is removably mounted about the socket while a separate integral scuff cap is slidably attached in an overlying manner to each leg and extends in an upward direction to overlie a portion of the base column.

3,705,705

SEAT DECELERATION ATTENUATION APPARATUS

Walter S. Eggert, Jr., Huntingdon Valley, Pa., assignor to The Budd Company, Philadelphia, Pa.

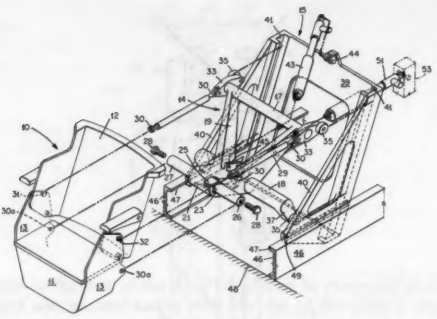
Filed Aug. 23, 1971, Ser. No. 173,944

Int. Cl. F16m *11/20*

U.S. Cl. 248—430 **7 Claims**

Seat support apparatus for a vehicle equipped with independent orthogonal deceleration devices. A seat is attached to a carriage which is constrained for movement in a vertically disposed track in a frame. The frame is constrained for fore and aft movement on a rail attached to the floor. The seat is supported for relative lateral movement to the carriage; such movement being normally decelerated by lateral attenuation means. The carriage supporting the seat is restrained against

vertical movement by attenuation means secured between the frame and the carriage; while fore and aft deceleration is provided by attenuation means interposed between the floor of the aircraft and the frame.



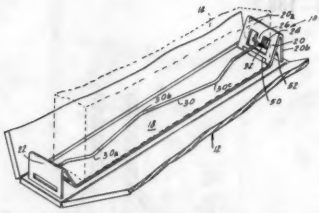
The Invention herein described was made in the course of or under a contract or subcontract thereunder with the Department of Navy.

3,705,706

HANGER HARDWARE FOR A DIRECTORY

Robert N. Azzato, Pheonix, Ariz., assignor to General Binding Corporation, Northbrook, Ill.

Filed Jan. 22, 1971, Ser. No. 108,902
Int. Cl. A47b *97/00*
U.S. Cl. 248—441 **10 Claims**



A simple, inexpensive hanger means for a directory that is readily adaptable for any type of installation and which provides fast and secure attachment of the directory comprises a backing support member having an end support means integral with each end thereof and generally upstanding therefrom, said end support means having a wire attachment means integral therewith and a spring wire adapted to be snapped into locking engagement with the wire attachment means. A slot in at least one of the end support means receives therethrough a pair of legs of a detachable hanger connector. Each of the legs has a notch thereon which securely locks the hanger connector in place when the legs are spread. The detachable hanger connector has various connection means thereon such as a swivel, wire hook, and lanyard.

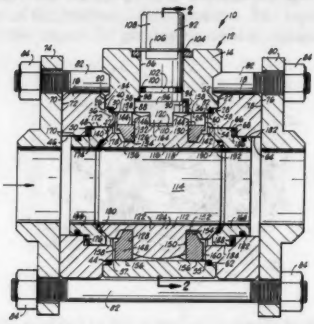
3,705,707

SELF-ALIGNING TRUNNION BALL VALVE

Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.

Filed July 13, 1971, Ser. No. 162,224
Int. Cl. F16k *5/06*
U.S. Cl. 251—84 **17 Claims**

A ball valve in which the spherical valve member is rotatably supported in the valve body by two bearing members slidably disposed therein. Each bearing member rotatably receives a respective journal member formed on the valve member. The two bearing members and the valve member supported thereby are adapted to move axially within the valve body during operation of the valve to provide proper alignment of the valve member in the valve body. Means are also disclosed for providing proper radial alignment of the valve member in the valve body.

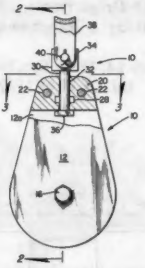


3,705,708

PULLEY BLOCK

Gerald A. Cunningham, Ward, Colo., assignor to Blockits, Inc., Ward, Colo.

Filed July 19, 1971, Ser. No. 163,568
Int. Cl. B66d *1/36*
U.S. Cl. 254—195 **6 Claims**



Rope or line block characterized by an intermediate connector disposed between ends of sheave side plates or cheeks and a shackle which, by choice of its position, relative to the cheeks, permits the connector to rotate about an axis perpendicular to the pulley axis or be secured against such rotation in alternative angular positions such as 90° apart, to thereby orient the shackle carried by same in alternative positions. Two shackles of alternative form may be provided, one of which permits the shackle to rotate about a transverse axis of the connector and the other which prevents such rotation.

3,705,709

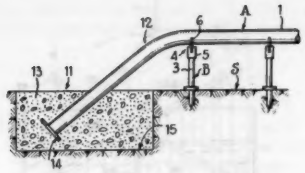
SAFETY RAIL FOR ROADS AND MOTORWAYS

Francois Georges Andriussi, Grenoble, France, assignor to Societe de Wendel et Compagnie, Paris, France

Continuation-in-part of Ser. No. 710,005, March 4, 1968. This application June 3, 1970, Ser. No. 42,970
Int. Cl. E01f *15/00*
U.S. Cl. 256—13.1 **13 Claims**

Safety rail for roads and motorways comprising in combination at least one element which has a great effective length without a break and a large linear mass and an undeformable section having a relatively large modulus of inertia and is capable of deforming plastically to a great extent, and sup-

ports on which said element rests horizontally with no appreciable mechanical attachment thereto and which substantially unaffect the homogeneity of said fundamentally active element.

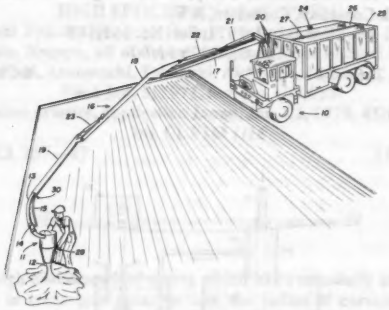


3,705,710

SOLIDS FEEDER SYSTEM

Frederick N. Mueller, Dallas, Tex., assignor to Tetradyne Corporation, Dallas, Tex.

Filed June 7, 1971, Ser. No. 150,543
Int. Cl. B28c *5/06*
U.S. Cl. 259—151 **4 Claims**



A system is provided for dispensing and delivering particulate material which includes an upright hopper with continuous sidewalls converging to a generally elongated outlet at the bottom, an endless conveyor belt positioned to move across the outlet which carries a series of upright cleat members. A housing enclosing the conveyor belt, and an air flow channel extending transversely through the housing and between adjacent cleats as they move past the air flow channel to thereby transmit solids therefrom which are entrapped between adjacent cleats as the belt moves across the hopper outlet. A preferred system is provided which includes one or more of such solids dispensing and delivery systems for transmitting components of a settable cementitious mixture to a suitable cement mixing zone via a gas stream.

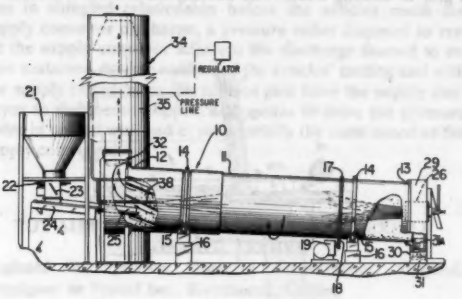
3,705,711

INTERNALLY HEATED ROTARY DRUM FURNACE WITH SMOKE ABATER

Karl H. Seelandt, Oregon, and Hobart L. Wentworth, Barrington, both of Ill., assignors to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed Nov. 27, 1970, Ser. No. 93,198
Int. Cl. F27b *7/00*
U.S. Cl. 263—32 R **14 Claims**

A cylindrical dryer drum is mounted for rotation about its longitudinal axis and has a burner at one end and an inlet for metallic scrap or swarf at the other end with the scrap being advanced longitudinally through the drum in contact with the products of combustion. One end of the dryer has a discharge chute for the scrap with both the inlet and discharge being substantially sealed against the entry of air into the drum. The products of combustion are discharged at the inlet end of the drum into a vertical stack provided with an afterburner.

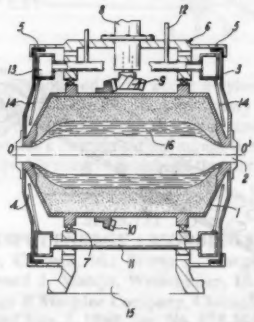


3,705,712

AXIAL POURING-NOZZLE STRUCTURE FOR ROTARY MELTING FURNACE

David Yerouchalmi, 3 rue de L'Idle de France 78, Le Mesnil, Saint Denis, France

Filed Oct. 16, 1970, Ser. No. 81,343
Claims priority, application France, Oct. 24, 1969, 6936565
Int. Cl. F27b *7/20*
U.S. Cl. 263—33 R **9 Claims**



The nozzle structure has a substantially frustoconical profile of revolution about the axis of rotation of the furnace and comprises a metallic partition system which provides recesses having their openings on the internal periphery of said profile, ceramic bricks which are fitted within the recesses and fluid-circuits for cooling the partition system.

3,705,713

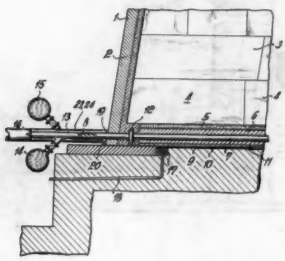
BOTTOM COOLING DEVICE FOR SHAFT FURNACES

Walter Wirtz, Duisburg, and Ulrich Genge, Homberg, both of Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

Filed Nov. 2, 1970, Ser. No. 85,978
Claims priority, application Germany, Nov. 12, 1969, P 19 56 837.7
Int. Cl. F27b *1/24*
U.S. Cl. 263—44 **13 Claims**

A bottom cooling device for shaft furnaces, particularly for blast furnaces, comprises an arrangement of cooling pipes behind a layer of lining bricks which are made of graphite or carbon. The lining bricks are adapted to contain a liquid metal which has a destructive effect on the bricks particularly a metal such as pig iron. The device includes a metal layer of

high thermal conductivity which is arranged between a lining layer and a terminal plate and within which there is embedded a grid of cooling ducts. The cooling ducts form a secant in



respect to the base circle of the furnace and they connect to a ring duct having diametrically opposite inlet and outlet connections.

3,705,714

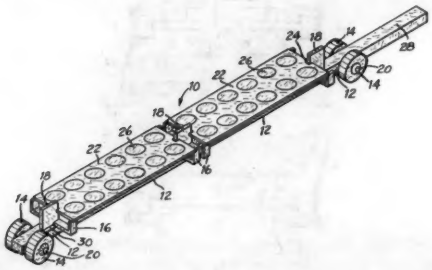
SILICON NITRIDE KILN FURNITURE

Richard A. Alliegro, Holden, Mass., assignor to Norton Company, Worcester, Mass.

Filed May 20, 1971, Ser. No. 145,190

Int. Cl. F27d *5/00*

U.S. Cl. 263—47 R **2 Claims**



A device or item of kiln furniture for the conveyance of silicon wafers into and out of a diffusion furnace in the manufacture of silicon diodes. The device is made essentially of high purity silicon nitride and consists of an elongated base with rotatable wheels attached thereto, and supporting means for carrying silicon wafer laden silicon nitride or silicon boats. The device, by virtue of its design and material of which it is composed, satisfies the peculiar and stringent requirements of silicon diode manufacture, by virtue of the devices ability to retain its integrity through repeated thermal shock, its chemical purity, and its non-dust generating character.

3,705,715

METHOD AND APPARATUS FOR QUENCH HARDENING ELONGATED WORKPIECES

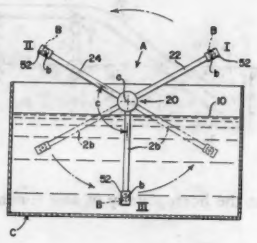
Richard S. Sheetz, Shaker Heights, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Oct. 1, 1970, Ser. No. 77,278

Int. Cl. C21d *1/66*

U.S. Cl. 266—4 A **5 Claims**

A method and apparatus for quench hardening a plurality of successive elongated workpieces supported on a carrier and movable in a generally circular path from a loading station, to a heating station, and then through a quench hardening station wherein the members supporting the workpieces on the carrier are independently movable with respect to the other mem-



bers of the carrier, at least in the vicinity of the quenching station.

3,705,716

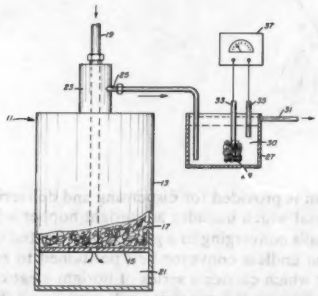
MONITORING SILVER RECOVERY

Thomas N. Hendrickson, Perry, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 9, 1971, Ser. No. 161,148

Int. Cl. C22b *11/00*

U.S. Cl. 266—22 **6 Claims**



Silver is recovered from a photographic processing solution by passing the solution through a mass of steel wool in a recovery vessel. The effluent electrolyte from the vessel is then passed through a voltaic cell wherein one of the electrodes is iron in the form of steel wool. When the steel wool in the recovery vessel has lost its power to efficiently remove silver, silver ions appear in the effluent electrolyte in increasing concentration. Upon the generation of a predetermined value of electrical current in the voltaic cell representing a predetermined silver concentration, the recovery unit is disconnected and sent off for refining of the contained silver.

3,705,717

ROTARY FURNACE DOOR DESIGN

Edward J. Hadberg, Gary, Ind., assignor to United States Steel Corporation

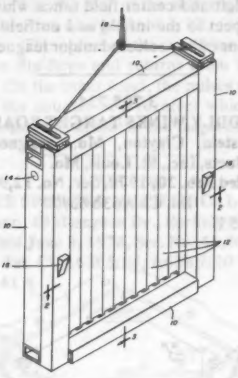
Filed Jan. 25, 1971, Ser. No. 109,351

Int. Cl. F27b *17/00*

U.S. Cl. 266—24 **1 Claim**

A refractory-free furnace door comprising a plurality of ver-

tically disposed tubular metallic pieces pivotally suspended within a frame member in a side-by-side abutting relationship.



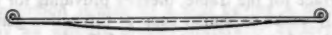
The ends of each tubular piece are open so that air will circulate therethrough to air-cool the door.

3,705,718

HIGH EFFICIENCY LEAF SPRING

Hiroshi Fukui, Gifu-ken; Gakuji Iwatsu, Tokai, and Junichi Kato, Nagoya, all of Japan, assignors to Aichi Steel Works Limited, Araomachi, Tokai-shi, Aichi-ken, Japan

Filed Jan. 5, 1971, Ser. No. 104,018
Claims priority, application Japan, Jan. 22, 1970, 45/6150
Int. Cl. F16f 1/18
U.S. Cl. 267—47 **3 Claims**



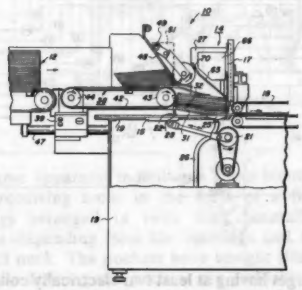
A high efficiency leaf spring which has a circularly arcuate shape in transverse cross section, the radius of curvature of said circularly arcuate shape continuously being increased with the bending moment progressively decreasing from a point where it is largest, based upon a logical analysis and development, so that the maximum tensile stress may be uniform over the entire length of the spring.

3,705,719

ARTICLE HANDLING APPARATUS

Neil A. Polit, Cary, and Albert G. Enskat, Barrington, both of Ill., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 28, 1970, Ser. No. 75,902
Int. Cl. B65h 3/08, 29/22
U.S. Cl. 271—3 **3 Claims**



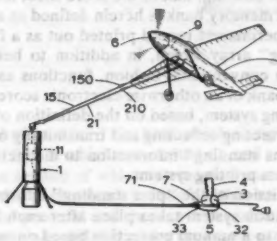
An automatic loading apparatus especially designed to handle folded articles such as newspapers, the apparatus including a supply conveyor for bringing newspapers forward to a feeder-hopper, the hopper being below and extending beyond the discharge of the supply conveyor; means to place the articles in shingled relationship before the articles reach the supply conveyor discharge; a pressure roller disposed to rest on the supply conveyor adjacent the discharge thereof to assure sustained driving contact of the articles' trailing end with the supply conveyor as the articles pass from the supply conveyor to the feeder-hopper; and means to drive the pressure roller in unison with and at substantially the same speed as the supply conveyor.

3,705,720

TOY AIRCRAFT ROUNDABOUT WITH FLEXIBLE CONTROL TETHER

Reginald W. Nicholls, Stansted Mountfitchet, England, assignor to Mattel Inc., Hawthorne, Calif.

Filed Jan. 26, 1971, Ser. No. 109,877
Claims priority, application Great Britain, Feb. 3, 1970, 5,151/70
Int. Cl. A63h 27/04
U.S. Cl. 272—31 A **9 Claims**



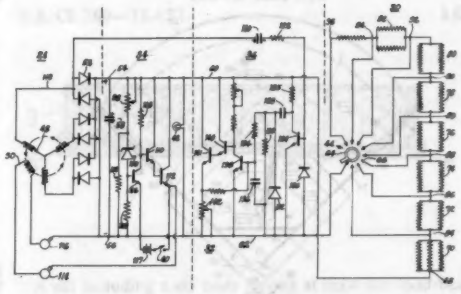
A model aircraft adapted to fly about a pylon to which it is tethered is powered and controlled by rotary movement of power and control wires between the pylon and aircraft. The aircraft incorporates a compensating linkage between the control wire and movable control surface of the aircraft.

3,705,721

CONSTANT INPUT ENERGY ABSORBING APPARATUS

John R. Lulay, Chicago, Ill.; Bruno J. Marusarz, Chicago, Ill., and Edward J. Mateja, Westchester, Ill., assignors to American Gage & Machine Company, Chicago, Ill.

Filed Nov. 5, 1969, Ser. No. 874,264
Int. Cl. A63b 23/04
U.S. Cl. 272—73 **6 Claims**



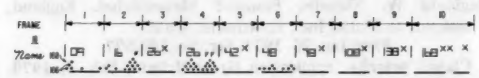
An energy absorbing apparatus of the dynamometer type which in one embodiment is combined with a stationary exercising device. The apparatus includes a generator supplying a load to be connectively switched to the generator. A regulator maintains the output voltage of the generator at a constant

value while an auxiliary load is provided and is controlled by a switch responsive to the variations in the rotation rate of the generator to maintain its horsepower input at a substantially constant value.

3,705,722
METHOD AND APPARATUS FOR AUTOMATIC BOWLING SCOREKEEPER

John G. Bolger, Jr., Orinda, and Carl A. Walker, Moraga, both of Calif., assignors to Digilux Corporation

Filed June 9, 1970, Ser. No. 44,733
Int. Cl. A63d *5/00, 5/04*
U.S. Cl. 273—54 C **26 Claims**



The disclosure introduces a new concept in automated scoring systems for bowling; that of the score sheet memory bank. A score sheet memory bank is herein defined as a score sheet presenting a permanent record printed out as a function of a "pins standing" array which, in addition to being optically projectable in conventional fashion, functions as a non-electric memory bank of an otherwise electronic score computer.

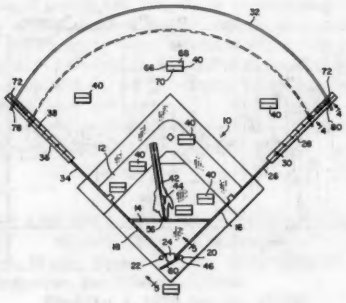
A pin sensing system, based on the definition of pin sensing zones by intersecting reflecting and transmitting optical paths, transmits "pins standing" information to distinct optical projection and data printing systems.

The transmission of the "pins standing" information to the optical projection system takes place after each ball is rolled and is subject to a manual correction based on individual observation prior to the time a circuit to the data printing system is completed through a momentary time delay circuit. The data printing system then prepares a permanent record of the standing pin array which is optically projectable in conventional fashion and, additionally, functions as the memory bank of an optoelectronic computer system which performs summing computations culminating in a digital printout for each frame.

3,705,723
BASEBALL GAME

Charles J. Eissler, 5810 N. 6th Street, Philadelphia, Pa.

Filed Jan. 29, 1971, Ser. No. 110,995
Int. Cl. A63f *7/06*
U.S. Cl. 273—89 **4 Claims**

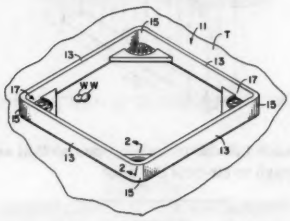


A baseball game suitable to simulate an actual baseball game including a bat rotatable by one of the players to hit a disc-like ball pitched by another player and a pitching arm for directing the disc-like ball toward the bat. The said pitching arm is freely movable behind a pitching line to direct fast balls, slow balls and curve balls toward the rotatable bat as determined by the actions of one of the players. The game also includes a game board defining an infield and an outfield and a movable right, left and center field fence which may be positioned with respect to the infield and outfield to simulate the actual dimensions of any selected major league stadium.

3,705,724
TIDDLY WINKS TARGET BOARD

Alfred C. Einstein, Clayton, Mo., assignor to Affiliated Hospital Products, Inc., St. Louis, Mo.

Filed Feb. 20, 1970, Ser. No. 12,954
Int. Cl. A63b *63/00*
U.S. Cl. 273—95 E **8 Claims**

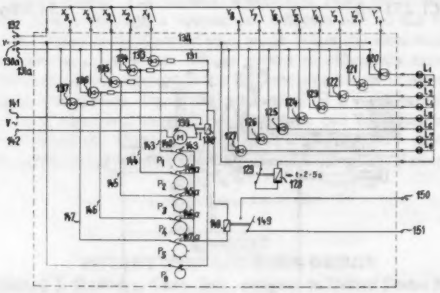


A game unit including a frame having a rim and a plurality of pockets with a central through-hole void zone therebetween and within the bounds of the rim and pockets, for enabling play from said central void zone into selected ones of said pockets. The frame may be vertically reversible to turn pockets upside down, with pockets having a high upper edge facing the void zone when turned up on one side and a lower height upper edge facing the void zone when turned up on the other side as compared to a table or floor or other supporting surface for the frame, thereby providing for the playing of tiddly winks or similar snap or flip action games from said central void zone, at two levels of difficulty.

3,705,725
TARGET AND CIRCUIT MEANS FOR AUTOMATICALLY INDICATING THE SCORE OF A PROJECTILE SHOT FROM A TARGET

Claude Thalmann, Egg Bei Zurich, Switzerland, assignor to Polytronic Ltd., Saint-Aubin, Switzerland

Division of Ser. No. 638,692, May 2, 1967, Pat. No. 3,529,828.
This application Oct. 23, 1969, Ser. No. 871,368
Claims priority, application Switzerland, May 3, 1966, 6371/66
Int. Cl. F41j *5/04*
U.S. Cl. 273—102.2 A **7 Claims**



A shooting target having at least two electrically conductive sheets, which are connected to circuits for automatically indicating position and point value of hit scored, the projectile fired simultaneously contacting the two sheets to close the cir-

cuit. The circuit utilizes two shift registers, each of which is connected to an oscillator. Each shift register comprises flip-flops each connected to respective conductive zones and sectors of the target. The flip-flop of the shift register is triggered via a NAND gate when a target zone is hit, and it, in turn triggers an oscillator. The pulses of the oscillator are directed on one hand to the flip-flops and returns them to their steady-state condition. On the other hand, the pulses of the oscillator are directed to the counter of a receiver which indicates the value which corresponds to that of the target zone hit.

3,705,726

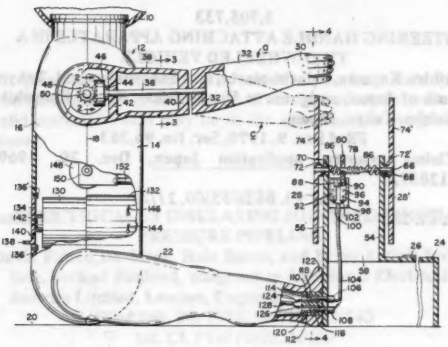
POINTER SPINNING MECHANICAL DOLLS

Frank T. Johmann, 49 Hampton Dr., Berkeley Heights, N.J.

Filed June 8, 1970, Ser. No. 44,064

Int. Cl. A63f *5/04*; A63h *3/20*

U.S. Cl. 273—141 A **10 Claims**



This invention relates to a doll having a movable hand driven by an electric motor, preferably battery operated, which hand can move through a sequence of positions to spin a pointer, thus permitting the doll to appear to be an active participant in conventional games wherein a marker is moved on a game board a certain number of spaces determined by spinning a pointer.

3,705,727

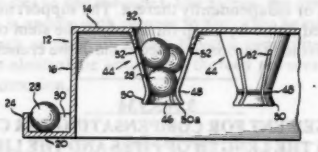
BOARD GAME APPARATUS

Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates

Filed Dec. 15, 1970, Ser. No. 98,291

Int. Cl. A63f *3/00*

U.S. Cl. 273—135 B **2 Claims**



A game apparatus including a game board having playing piece receiving areas in the form of a finite number of openings arranged in rows with generally frustoconical pockets depending from the openings and terminating in a reduced neck. The pockets have upright slits therein so that the walls defining the pockets are yieldable. The game apparatus further includes a chance device for determining the location of a playing piece and playing pieces of a size and shape slightly larger than the terminal end of the pockets so that they may be held therein but may be pushed through the yieldable walls of the pocket responsive to a force applied to a playing piece.

3,705,728

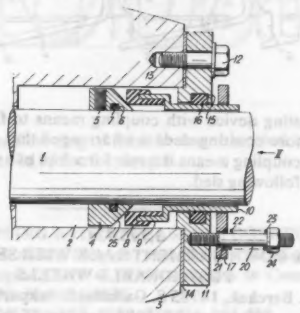
ROTARY SHAFT SEALS

Thomas Ritchie Millar, Slough, England, assignor to Trist Mouldings & Seals Limited, Buckinghamshire, England

Filed Dec. 3, 1970, Ser. No. 94,694

Int. Cl. F16j *15/34*

U.S. Cl. 277—81 **3 Claims**



A rotary shaft seal is of the kind which comprises two sealing rings, the first of which is mounted on and rotates with the shaft and the second of which is mounted on a non-rotatable sleeve. The sleeve surrounds the shaft within a tubular housing which has an open end and the sleeve is sealed to the housing in which it is axially slidable under spring pressure to press the second ring against the conical surface on the first ring to form a seal. The first sealing ring is mounted on the shaft within the housing, the second sealing ring is mounted on the inner end of the sleeve, the spring pressure urges the sleeve inwards into the housing to press the second ring against the conical surface on the first ring and the seal between the sleeve and the housing is at the open outer end of the housing, that is on the side of the second sealing ring remote from the first sealing ring.

3,705,729

SKI

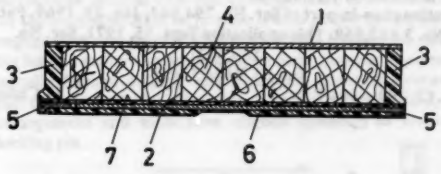
Anton Arnsteiner, 5730 Mittersill, Austria

Filed Feb. 19, 1970, Ser. No. 12,209

Claims priority, application Austria, Feb. 21, 1969, A1767/69

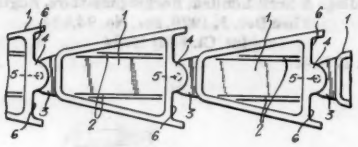
Int. Cl. A63c *5/12*

U.S. Cl. 280—11.13 L **1 Claim**



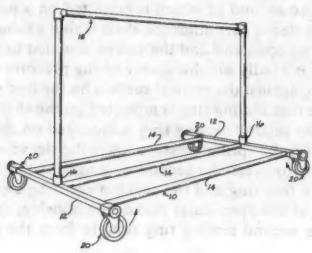
A ski including a ski body having at least one load-bearing lower facing sheet, steel edges and at least one intermediate layer of an elastomeric material, and the steel edges being laterally arranged adjacent the lower facing sheet whereby the steel edges and lower facing sheet both are connected to the ski body over the common intermediate layer of elastomeric material so that the latter dampens stresses developed under varying load and temperature conditions.

3,705,730
COASTING DEVICE
Jon Bergsland, Hoffsum 60, Oslo 3, Norway
Filed Feb. 9, 1970, Ser. No. 9,718
Claims priority, application Norway, Feb. 11, 1969, 534169
Int. Cl. B62b *13/00*
U.S. Cl. 280—24 5 Claims



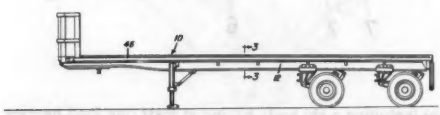
A coasting device with coupling means to form a train of two or more coasting sleds is so arranged that at each side of the rear coupling means is a rest for a foot of a rider sitting on the next following sled.

3,705,731
KNOCK-DOWN GARMENT RACK WITH SELECTIVELY POSITIONABLE WHEELS
James L. Berchak, 14785 S. Gallatin, Brookpark, Ohio
Filed Sept. 28, 1970, Ser. No. 75,960
Int. Cl. B62b *11/00*
U.S. Cl. 280—36 R 5 Claims



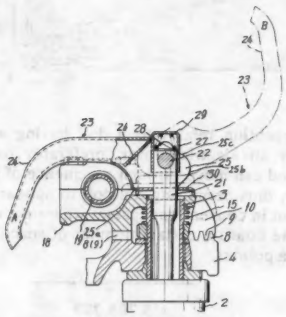
A knock-down garment rack, which has a main frame member on which are mounted wheels which wheels are selectively positionable in an operative position and in a storage position.

3,705,732
TRAILER CONSTRUCTION
Joseph A. Marinelli, New Castle, Pa., assignor to City Weldings & Manufacturing Co., Inc.
Continuation-in-part of Ser. No. 794,944, Jan. 29, 1969, Pat. No. 3,612,569. This application Sept. 15, 1971, Ser. No. 180,562
Int. Cl. B62d *53/06*
U.S. Cl. 280—106 T 11 Claims



A combined vehicle frame and load bed construction including a pair of elongated generally parallel longitudinal beams interconnected at points spaced longitudinally therealong by means of a plurality of transverse beam members extending and secured therebetween. The construction further includes outboard transverse brace members secured to and projecting endwise outwardly from the remote sides of the longitudinal beams and the outer ends of the transverse brace members are innerconnected by means of longitudinal rail members secured thereto. A plurality of side-by-side longitudinally extending and longitudinally staggered decking members are secured over the transverse beam members and brace members and the upper surfaces of the longitudinal beams are spaced above the upper surfaces of the transverse beam members. The brace members and the decking members are sufficient in vertical thickness to project slightly above the longitudinal beams when secured to the transverse beam members and brace members and include panel-like portions of reduced vertical thickness extending over the longitudinal beams in order that a substantially planar decking surface is provided with substantially all portions of the decking members solidly supported from beneath by either the transverse beam members and brace members or the longitudinal beams.

3,705,733
STEERING HANDLE ATTACHING APPARATUS IN A TWO-WHEELED VEHICLE
Mikihiro Koyama, Adachi-machi, and Takashi Inagaki, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 9, 1970, Ser. No. 96,363
Claims priority, application Japan, Dec. 20, 1969, 44/120572
Int. Cl. B62k *15/00*, *21/24*
U.S. Cl. 280—278 5 Claims

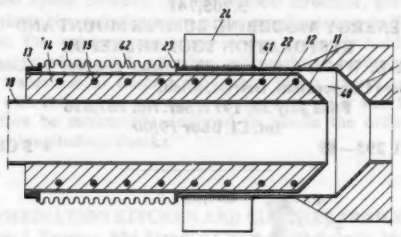


A steering handle for a two-wheeled vehicle is attached to a support member facing the upper end of a front wheel fork attached to a steering stem. The support member is rotatably mounted on the steering stem and the fork and support member have opposed crenelations which are engageable and disengageable, so that the steering handle support member can be rotated either together with the upper end of the front wheel fork or independently thereof. The support member can be displaced either by a cap threaded on the stem or by a cam member pivoted thereon in order to mesh the crenelations.

3,705,734
ARRANGEMENT FOR COMPENSATING FOR CHANGES IN THE LENGTH OF PIPES AND THE LIKE
Gundolf E. Rajakovics, Wien, Austria, assignor to Gebr. Boehler & Co., A.G., Kapfenberg, Austria
Filed May 13, 1970, Ser. No. 36,763
Claims priority, application Austria, May 16, 1969, A 4659/69
Int. Cl. F16l *53/00*
U.S. Cl. 285—41 6 Claims

Arrangement for compensating for changes in the lengths of pipes subjected to high operative temperatures. One of the two pipe portions at a joint between them extends into the other, and a flexible pleated sleeve surrounds the inner pipe

portion, the space between the pleated sleeve and the inner pipe being dead ended at a location remote from the zone at which the two main portions of the pipes confront each other. The arrangement includes means for cooling the space within



the pleated sleeve, and means selectively to heat such space and its contents, as at the start of an operation, to melt any solid material which may be in the space within the pleated sleeve.

3,705,735

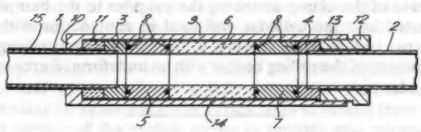
ELECTRICALLY INSULATING JOINTS FOR HIGH-PRESSURE PIPELINES

David Fulton Davidson, Hale Barns, and Brian Arthur Irving, Sale, both of England, assignors to Associated Electrical Industries Limited, London, England

Filed Feb. 20, 1970, Ser. No. 13,143

Int. Cl. F16l *19/02, 58/00*

U.S. Cl. 285—53 **7 Claims**



An electrically insulating joint between two electrically conducting pipe which in use are at different electrical potentials, wherein the pipes are clamped to opposite ends of an insulating spacer sleeve with metal collars interposed between the ends of the sleeve and the pipes, and at least the one of the collars which is anodic with respect to the other being formed of a metal such as titanium which forms a protective insulating skin under electrolytic action and thereby reduces the rate of galvanic corrosion.

3,705,736

JOINTS FOR FLEXIBLE DUCTING

Gordon Bertram Dawson, Worcester, England, assignor to Dowty Meco Limited, Worcester, England

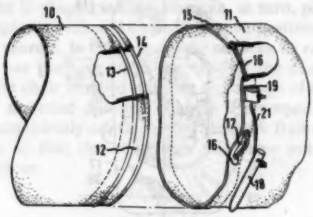
Continuation-in-part of Ser. No. 825,906, May 19, 1969, abandoned. This application March 3, 1971, Ser. No. 120,533

Claims priority, application Great Britain, Feb. 6, 1969, 6,398/69; June 27, 1969, 32,558/69; March 6, 1970, 10,948/70

Int. Cl. F16l *31/00*

U.S. Cl. 285—260 **11 Claims**

A joint is made between two lengths of flexible ventilation ducting by tightening around a seam on an end of one length



of ducting an endless ring of flexible strand located in a seam on the adjacent end of another length.

3,705,737

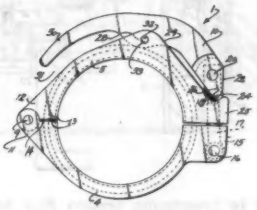
PIPE COUPLING WITH RELEASABLE CONNECTOR

Robert E. Westerlund, Mequon, and Herbert A. Westerlund, Port Washington, both of Wis., assignors to Construction Forms, Inc., Cedarburg, Wis.

Filed April 23, 1971, Ser. No. 136,682

Int. Cl. F16l *17/00*

U.S. Cl. 285—365 **9 Claims**



A coupler unit includes two hemispherical sections having a U-shaped cross-section and opposed radial end faces. A hinge pin connects the one end of the sections with a selected spacing between the opposing faces. A toggle assembly connects the opposite ends and includes a bolt, pivotally attached to a first section and having an outer nut pivotally connected to a handle which extends over the adjacent section. The handle includes an integral cam end corresponding to a cam surface on the second section to provide a cam action in response to engagement and pivotal movement of the handle. An operating handle extends over the coupler sections with a central integrally formed enlargement extending inwardly between a pair of walls with the enlargement resting on the section. The enlargement and walls have aligned openings to receive a locking pin.

3,705,738

DOOR LATCH MECHANISM

Noboru Yoshimura, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi Pref., Japan

Filed Sept. 28, 1970, Ser. No. 75,848

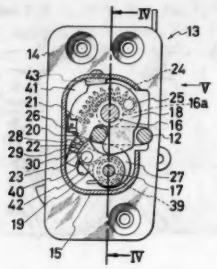
Claims priority, application Japan, Oct. 4, 1969, 44/94742

Int. Cl. E05c *3/26*

U.S. Cl. 292—216 **5 Claims**

An automotive door latch mechanism comprising a rotatable latch bolt in the form of a fork, and a bolt-supporting shaft,

said shaft being enlarged at a part with which a striker pin is engageable thereby permitting its tight engagement with the



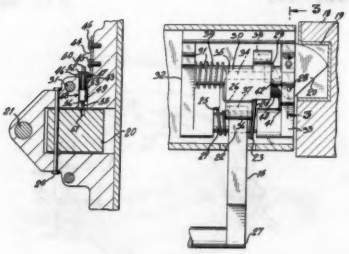
striker pin for preventing the lowering of the vehicle door relative to the stationary member thereof.

3,705,739

PANIC LOCK DEVICE

Norman R. Adler, Fitchburg, Mass., assignor to Ilco Corporation, Fitchburg, Mass.

Filed July 7, 1971, Ser. No. 160,421
Int. Cl. E05c *19/00*
U.S. Cl. 292—92 **7 Claims**



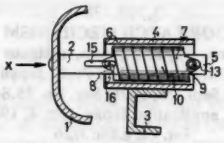
An improved panic lock device of the type in which a latch bolt is retracted responsive to forces exerted on an eccentrically weighted, pivotally mounted panic bar. The improvement relates to a shear pin assembly operatively projected into position to prevent downward pivotal movement of the bar and, hence, premature retraction of the latch bolt should the bar support spring lose their temper, as would be the case if the latter were subjected to high temperature conditions.

3,705,740

COLLISION FORCE ABSORPTION DEVICE

Masanao Shiomi, Toyota-shi, and Tadataka Narumi, Kariya-shi, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed Dec. 12, 1969, Ser. No. 884,675
Claims priority, application Japan, Dec. 17, 1968, 43/92763
Int. Cl. F16f *7/12*; B60r *19/06*
U.S. Cl. 293—89 **1 Claim**



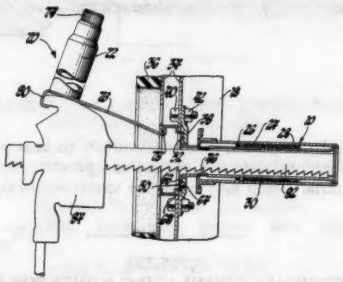
An energy absorbing member in the shape of a coil having a plurality of closely spaced loops, being capable of plastic deformation in one direction only, and being rigid in the opposite direction, said energy member being fixed at one end through a force receiving member to a vehicle accessory, such as a bumper, or a seat, and being fixed at the other end through a support member to the vehicle chassis.

3,705,741

ENERGY ABSORBING BUMPER MOUNT AND RESTORATION TOOL THEREFOR

Robert L. White, Frankenmuth, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 30, 1971, Ser. No. 167,616
Int. Cl. B60r *19/00*
U.S. Cl. 293—89 **5 Claims**



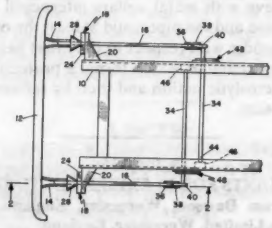
An energy absorber of the type having a plurality of rolling bodies engaged between a pair of telescopable cylinders mounts a bumper to a vehicle. One of the telescopable cylinders is attached to the vehicle frame and the other is releasably clamped to the bumper and includes a splined surface on the inner periphery thereof. A restoring tool includes a hook which is used in conjunction with a conventional bumper jack in pulling the bumper away from the frame, thus restoring the cylinders to their pre-impact axial relation. The restoring tool also includes a splined portion which, subsequent to release of the clamp attaching the cylinder to the bumper, is inserted into the cylinder and used in conjunction with the bumper jack to effect rotation of the cylinder and consequent alignment of the rolling bodies with an undeformed area of the cylinder.

3,705,742

VEHICLE BUMPER ASSEMBLY

Willis L. Lipscomb, 2208 Willow, San Diego, Calif.

Filed Nov. 1, 1971, Ser. No. 194,344
Int. Cl. B60r *19/06*
U.S. Cl. 293—89 **8 Claims**



A vehicle bumper assembly providing for limited damping of transverse or slanting of the bumper or impact-receiving member as well as damping of longitudinal movement under impact, the latter movement being opposed by a torsion bar. The torsion bar, conceived as ordinarily provided in duplicate, is located some considerable distance from the end of the vehicle and connected to the bumper by a push rod so that, as

long as the relatively stout push bar remains functional the torsion bar will ordinarily be effective in damping the movement of the bumper relative to the frame. Novel means is provided for resiliently mounting the push bar and a unique dual function is obtained in the torsion bar since it is mounted for limited flexing as a spring in addition to its torque function. A resilient apron conceals the mechanical structure, prevents vibration noise and also has a minor supplementary buffering action. The primary supporting means resiliently holds the bumper in place while allowing, with resistive buffering action, transverse or slanting movement under impact conditions with little or no activation of the torsion bar which can therefore be structurally designed to handle the ordinarily greater longitudinal shocks.

3,705,743

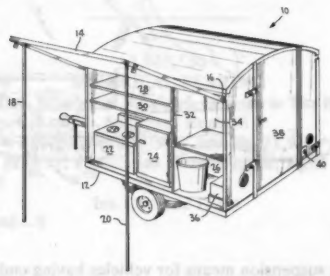
COMBINATION KITCHEN AND CLOTHES TRAILER

Thomas J. Toomey, 604 Paradise Court, Gaithersburg, Md.

Filed June 9, 1971, Ser. No. 151,343

Int. Cl. B60g *3/32*

U.S. Cl. 296—23 R **4 Claims**



A mobile trailer frame comprises a walled and roof housing which includes a hinged side opening which is supported by telescoping members to provide access to a mobile kitchen which includes a refrigerator, stove, and adjustable shelved compartments for the storage of food. The front and rear of the mobile trailer has a doorway which provides access to a clothing storage area which extends the full length of the trailer and which includes a fully extendible clothes rack which rides on nylon wheels in a track so as to extend from the closet outside of the mobile trailer to provide easy access to the clothes.

3,705,744

THREE POSITION FOLDING SEAT

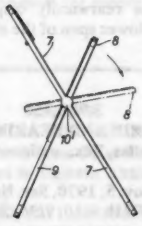
Giancarlo Piretti, and Leonida Castelli, both of Bologna, Italy, assignors to Anonima Castelli S.A.S., Bologna, Italy

Filed April 7, 1970, Ser. No. 26,314

Claims priority, application Italy, Sept. 20, 1969, 40195 A/69

Int. Cl. A47c *4/00*

U.S. Cl. 297—55 **9 Claims**



A folding chair has a rectangular outer frame in which a U-shaped inner frame is received. A flat seat is received within the inner frame with the seat and two frames all relatively pivotal about a common axis. Stops are provided at the axis to allow the seat to pivot relative to the inner frame from a position coplanar therewith to a position extending at an angle thereto. The U-shaped inner frame can, in turn, pivot from a position coplanar with said outer frame to a position extending at an angle thereto. In this manner the seat can be raised out of the down, use position while the base of the chair remains open and the chair remains standing for storage of the chair or passage of someone past the chair in a cramped aisle. The pivots are completely contained between the frames and seat at the axis so that the chair only has three independently movable pieces.

3,705,745

VEHICLE SEAT

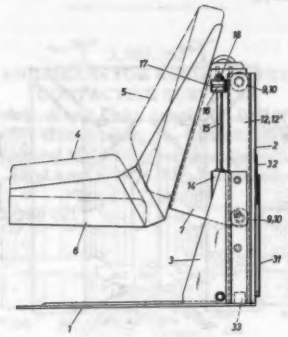
Manfred Ambrosius, Langenfeld-Richrath, Germany, assignor to Bremshey & Co., Solingen-Ohligs, Germany

Filed Sept. 16, 1968, Ser. No. 762,219

Claims priority, application Germany, Sept. 14, 1967, P 16 30 164.9

Int. Cl. B60n *1/02*

U.S. Cl. 297—308 **4 Claims**



A vehicle seat with endless adjustment of the resilient means of the seat rigidly connected with the back of the seat, which comprises a spring leg disposed on the back of the seat and continuously adjustable as to its inclination with length variations. A stationary seat frame includes guide rails for guiding the back of the seat by means of three pairs of rollers, and comprising first guide means arranged in longitudinal direction of the seatframe receiving and guiding two lateral of the pairs of rollers, the first guide means restraining movement of the seat in the direction of movement of the vehicle and second guide means receiving had guiding the third and central of pairs of rollers, the second guide means restraining movement of the seat in the transverse direction

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3,705,746

ICE RESURFACER

Starr R. McLeod, 148 Broadway, Sydney, Nova Scotia, Canada

Filed Sept. 14, 1970, Ser. No. 71,665

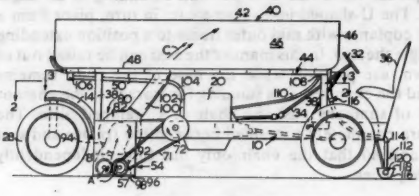
Claims priority, application Canada, Sept. 26, 1969, 063222

Int. Cl. E01h *5/12*

U.S. Cl. 299—25 **8 Claims**

A self-propelled ice shaving machine suitable for use in skating rinks or the like includes a pair of power rotary cutters positioned immediately beyond the steerable front wheels of the vehicle. A suction blower removes ice chips and cuttings blown upwardly from the rotary cutter blades and conveys the cuttings and chips to a receptacle disposed above the vehicle chassis. The vehicle is powered by means of an internal combustion engine and means are provided to connect the engine in heat exchange relationship with the receptacle thereby to

cause melting of the ice chips. The water derived from the melting of the ice is spread over the surface of the ice at the



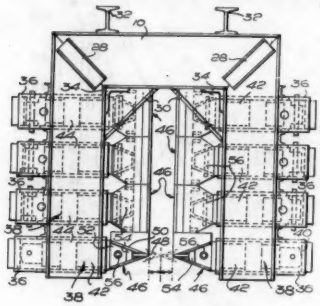
rear of the machine by means of a suitable water spreader connected to the vehicle chassis.

3,705,747

STRUCTURE DEMOLITION APPARATUS

Leonard John Blackburn, Fagley Cottage, Fagley Road, Bradford, England

Filed Dec. 28, 1970, Ser. No. 101,690
Int. Cl. E21c *27/30*
U.S. Cl. 299—70 **4 Claims**



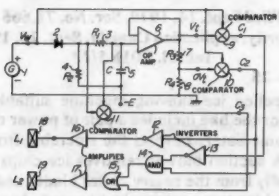
An apparatus for demolishing structures comprising a frame adapted to fit over or around a portion of the structure to be demolished and a plurality of cutting chisels which can be moved under hydraulic pressure to cause by a biting action severance of a piece of structure from the remainder.

3,705,748

CONTROL SYSTEM FOR PREVENTING THE SKIDDING OF VEHICLES

Takeshi Ochiai, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota-shi, Japan

Filed April 3, 1970, Ser. No. 25,436
Claims priority, application Japan, Oct. 20, 1969, 44/83758; Oct. 20, 1969, 44/99575
Int. Cl. B60d *8/08*
U.S. Cl. 303—21 BE **6 Claims**



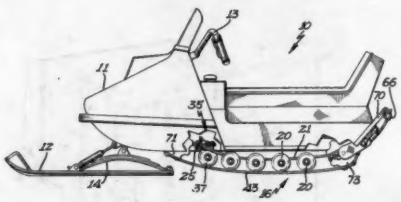
Equipment for of preventing the skidding of vehicles by detecting the speed of wheel rotation, comparing the detected speed with a set reference value of the deceleration characteristics, controlling the wheel rotation by suitably effecting three kinds of braking pressure operations, namely decreasing, maintaining and increasing the braking pressure, in response to the results of the aforesaid comparison, and renewing the reference speed value to be newly set when the wheel speed exceeds the previous set reference value by a predetermined amount, and an apparatus for modulating the wheel braking pressure at a required value adapted to driving conditions.

3,705,749

SUSPENSION SYSTEM FOR SNOWMOBILES

Charles V. Harvey, Route 3, Box 233, Forest Lake, Minn.

Filed April 6, 1971, Ser. No. 131,673
Int. Cl. B62d *55/10*; B62m *27/02*
U.S. Cl. 305—27 **9 Claims**



A track suspension means for vehicles having endless track drive and support surfaces, the vehicle having frame means with forward and rear mounting points. The track suspension means which is coupled to the vehicle at the mounting points includes longitudinally flexible leaf spring means, the leaf spring means having an axis disposed generally parallel to the track axis, and being adapted to flex vertically. The leaf spring, which carries a plurality of supporting means for the track, is secured at its forward end to the vehicle frame at the forward mounting point. The endless track suspension means includes forwardly and rearwardly disposed sprockets inscribed within the endless track, and mounting means are provided for the sprockets including mounting shafts. Track propelling means are coupled to the forwardly disposed sprockets, and track tensioning means and the rear of said leaf spring are operatively coupled to the rearwardly disposed sprockets. Pivot linkage means are provided for coupling the rear sprocket mounting means to the vehicle at the rear mounting point. The pivot linkage means includes a first arm pivotally coupled to the vehicle mounting point and with a floating pivot shaft journaled to the other end of the first arm. A second arm is provided having one end journaled to the floating pivot, and with the other end coupled to the rear sprocket mounting means. Resilient spring bias means are coupled to the second arm and normally urge the mounting shaft means for the rearwardly disposed sprockets in a direction toward the lower span of the endless track.

3,705,750

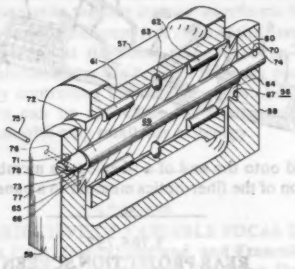
RETAINING PIN AND BEARING ASSEMBLY

Morgan L. Crow, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 5, 1970, Ser. No. 87,134
Int. Cl. E21b *9/10, 9/36*; E02f *15/44*
U.S. Cl. 308—8.2 **5 Claims**

An elongated retaining pin having offset end portions allows a bearing assembly to be loosened and easily removed. During

operation, the retaining pin is held in position. When the bearing is to be disassembled, the retaining pin is rotated to loosen the bearing assembly.



3,705,751

SPHERICAL BEARING

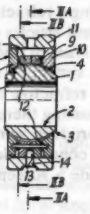
Colin W. Dee, Wimborne, England, assignor to The Horstmann Gear Co. Ltd., Bath, Somerset, England

Filed March 23, 1970, Ser. No. 21,916

Claims priority, application Great Britain, April 22, 1969, 20,503/69

Int. Cl. F16c *17/16*

U.S. Cl. 308—9 6 Claims



A fluid bearing has a radially-inner bearing member and a radially outer bearing member respectively having a part-spherical internal surface and a part-spherical external surface defining between them a fluid bearing gap, one of the bearing members having in it one or more rows of fluid feed slots disposed circumferentially and each opening at one end in the part-spherical surface of that bearing member, said bearing member including passage means communicating with the other end of each of the slots for supply of fluid through the slots to the bearing gap.

3,705,752

THRUST BEARING FOR MIDGET MOTORS

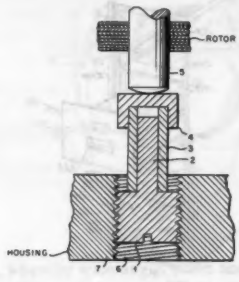
Hanns Ott, Nurnberg, and Hans Peter Latussek, Feucht, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed April 2, 1971, Ser. No. 130,581

Int. Cl. H02j *9/02*

U.S. Cl. 308—159 3 Claims

A thrust bearing includes an elastic member received in a cup-shaped threaded member that is secured to a housing structure of a midget motor, and a bearing plate mounted on the elastic member within the cup-shaped threaded member.



3,705,753

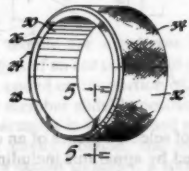
METHOD AND MEANS FOR REDUCING FRETTING OF CONTACTING SURFACES

John C. Bierlein, Royal Oak; Arnold O. DeHart, Rochester, and Louis W. Handwerker, Jr., Detroit, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 3, 1970, Ser. No. 60,260

Int. Cl. F16c *9/04*

U.S. Cl. 308—240 5 Claims



In a preferred embodiment, a journal bearing insert and its retainer have contacting cylindrical surfaces which are maintained in substantially fixed engagement but subject to variable loads, causing repetitive slight relative movement of the surfaces under pressure. Lubrication is provided to reduce fretting of the surfaces through a latticework of interconnected closely spaced grooves on the order of 10.001 inches deep, which may be etched or otherwise formed over the exterior surface of the insert on the interior surface of the retainer.

3,705,754

FILING UNITS

James R. Drum, and Philip A. Temple, both of Muscatine, Iowa, assignors to Hon Industries Inc., Muscatine, Iowa

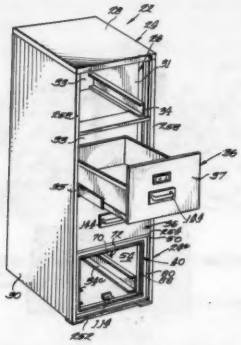
Filed Feb. 16, 1970, Ser. No. 11,649

Int. Cl. A47b *81/00*; F25d *11/00*

U.S. Cl. 312—214 18 Claims

A multidrawer filing unit is disclosed including a cabinet and one or more drawers of uninsulated construction, with an insulated vault case inserted in a section corresponding to one drawer space. The access opening of the vault case is aligned

with a front opening of the cabinet. A drawer for the vault case has an insulated front which provides an interfitting clo-



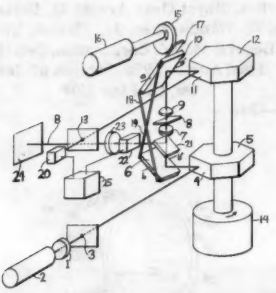
sure for the access opening of the vault case and also closes the aligned front opening of the cabinet.

3,705,755

MICROSCOPY APPARATUS

Stephen Charles Baer, 1837 Seminole Avenue, Bronx, N.Y.

Filed Aug. 24, 1970, Ser. No. 66,293
Int. Cl. G02b *17/00, 21/00*
U.S. Cl. 350—6 **11 Claims**



Images of areas of selected planes of an object or field to be viewed are provided by apparatus including means for focusing an incident beam of radiation onto a point in the selected plane, a pinhole aperture, means directing radiation emanating from the irradiated point onto said aperture, means synchronously scanning the incident and emanating beams in a raster pattern across said selected plane, means producing a third beam of radiation with an intensity proportional to the intensity of the radiation from said emanating beam directed onto said pinhole aperture, means focusing said third beam upon a point in an image plane, and means scanning said third beam across said image plane in synchronization with the scanning of said irradiated point across said selected plane, to produce an image of said selected plane at said image plane.

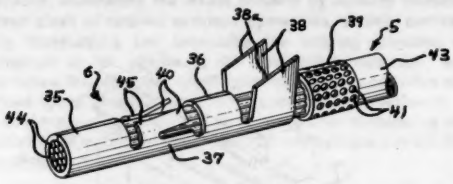
3,705,756

TERMINAL MEMBER FOR LIGHT TRANSMITTING MEANS

Joseph Richard Keller, and James Pritulsky, both of Harrisburg, Pa., assignors to AMP Domestic, Inc.

Division of Ser. No. 858,549, April 29, 1969, Pat. No. 3,638,008, which is a continuation-in-part of Ser. No. 591,254, Nov. 1, 1966, abandoned. This application Dec. 28, 1970, Ser. No. 101,655
Int. Cl. G02b *5/16*
U.S. Cl. 350—96 B **4 Claims**

A terminal member for terminating an end of a light transmission means for use in a device for effecting multiple light transmission from a single light source. The terminal member



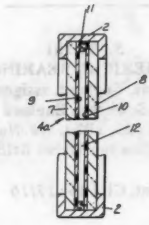
is crimped onto the end of a fiber-optics member to facilitate connection of the fiber-optics member to a panel display.

3,705,757

REAR PROJECTION SCREEN

Douglas B. Huber, Cincinnati, Ohio, assignor to Polacoat, Inc., Cincinnati, Ohio

Filed April 5, 1971, Ser. No. 131,110
Int. Cl. G03b *21/60*
U.S. Cl. 350—126 **10 Claims**



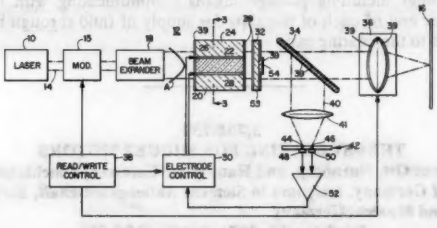
A rear projection screen which is essentially free from scintillation, said screen being composed of two essentially parallel screen surfaces lying in closely spaced apart relation, one of said surfaces comprising a refraction lens system composed of lens defining transparent articles contained in a plastic carrier coating, the other surface of said screen comprising either a second refractive lens system or a light transmissive matte surface which acts as a refractive system, said systems each acting to disperse light passing therethrough at different wave lengths to individually produce scintillation effects, said two systems jointly acting to counterbalance their respective scintillation effects to provide a screen which is essentially free from scintillation.

3,705,758

APPARATUS FOR CONTROLLING A BEAM OF COHERENT ELECTRO-MAGNETIC WAVES

Haim Haskal, Brookline, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 30, 1969, Ser. No. 889,054
Int. Cl. G02f *1/28*; H01s *3/00*; G01d *9/42*
U.S. Cl. 350—160 R **12 Claims**



Focusing means in the path of a beam of coherent electromagnetic waves focus the beam on a focal plane. The beam in-

tensity varies across the diameter. First transparent refractive means in the path of the more intense portion of the beam transmits the waveforms but retards their phase. Second transparent refractive means in the path of the less intense portion of the beam transmits the less intense waveforms but retards their phase an amount different from that of the first refractive means. Interference at the focal plane between the phase changed waveforms alters the original intensity profile of the waveforms. By controlling the relative phase changes the intensity pattern can be altered to be substantially uniform across the beam with only small loss of energy.

3,705,759

OPTICAL OBJECTIVE OF VARIABLE FOCAL LENGTH

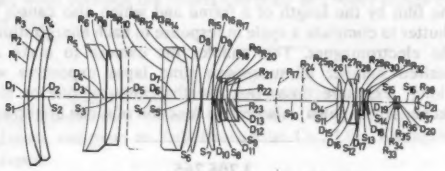
Gordon Henry Cook, Oadby, England, and Francois Laurent, Yverdon, Switzerland, assignors to The Rank Organisation Limited, London, England

Continuation-in-part of Ser. No. 39,122, May 20, 1970, abandoned, which is a continuation-in-part of Ser. No. 696,443, Jan. 8, 1968, abandoned. This application Dec. 18, 1970, Ser. No. 99,537

Claims priority, application Great Britain, May 20, 1970, 39,112/70

Int. Cl. G02b *15/16, 15/18*

U.S. Cl. 350—184 **15 Claims**



The invention relates to an optical objective for photographic or other purposes, having movable members disposed between front and rear members which are normally stationary, whereby the equivalent focal length of the objective can be continuously varied while maintaining constant the position of the image plane, and in particular concerns a zoom lens having a divergent front member, a convergent second member, a divergent third member, a convergent fourth member and a divergent fifth member, wherein the second and fourth members move forwardly and the third member simultaneously moves rearwardly for zooming towards maximum focal length and wherein the zooming system constituted by the first four members is characterized by a number of specified mathematical relationships involving the focal lengths and magnification ratios of the second, third and fourth members.

3,705,760

FACE GOGGLES

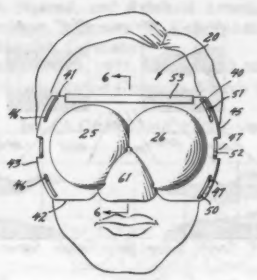
Walter J. Langendorfer, Lansdowne, and David W. Coffin, Sr., Prospect Park, both of Pa., assignors to Langendorfer Plastics Corporation, Lansdowne, Pa.

Filed March 4, 1971, Ser. No. 120,961

Int. Cl. G02c *7/10;* **A61f** *9/02*

U.S. Cl. 351—44 **7 Claims**

Face goggles for eye and face protection in the form of a transparent plastic, for instance acrylic, spherical face plate having individual viewing spheres positioned over the eyes of



the wearer, whereby wide angle vision and full protection are achieved.

3,705,761

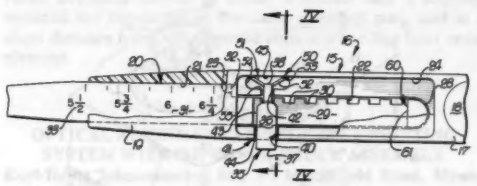
ADJUSTABLE TEMPLE FOR EYEGLASSES

Masakatsu Fujisawa, San Francisco, Calif., assignor to American Safety Equipment Corporation, Encino, Calif.

Filed Feb. 16, 1971, Ser. No. 115,583

Int. Cl. G02c *5/20*

U.S. Cl. 351—118 **5 Claims**



The adjustable temple for eyeglasses has a transversely notched front portion of an ear contoured part telescoped into a rearwardly open ended cavity portion of a forward part, and releasably locking member slidably positioned in a transverse open ended compartment in the forward part and in communication with the cavity portion, the locking member integrally including a detent shoulder, a spring member and an actuator end, whereby manual actuation of the actuator end moves the detent shoulder out of the notch against the action of the spring member, permitting manual longitudinal adjustment of the parts to fit different head sizes, and on release of the actuator end, the spring member forces the detent shoulder into an aligned notch to lock the parts together, providing individually adjusted eyeglasses.

3,705,762

METHOD FOR CONVERTING BLACK-AND-WHITE FILMS TO COLOR FILMS

Fred Ladd, Great Neck, N.Y., and Jung Hoon Song, Seoul, South Korea, assignors to Color Systems, Inc., New York, N.Y.

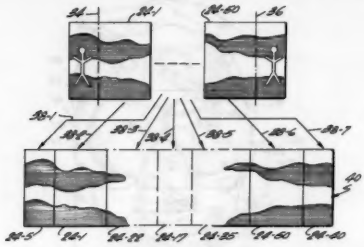
Filed Sept. 20, 1971, Ser. No. 182,044

Int. Cl. G03b *19/18, 21/32*

U.S. Cl. 352—38 **16 Claims**

A method for converting black-and-white animated cartoons to color cartoons. An enlarged print is made for each frame of the cartoon, a celluloid sheet is placed over each print, the outlines of the characters in the frame are drawn on the sheet, and the characters are then hand colored. Several prints corresponding to each scene are then cut in order to derive unobstructed background views. The background views are pieced together to form a photo-montage of the background for the scene. The background is then hand

colored. The final color film is made by placing successive celluloid sheets in successive positions on a common background



and exposing the final film frame-by-frame. A similar technique is disclosed for converting live-action films.

3,705,763

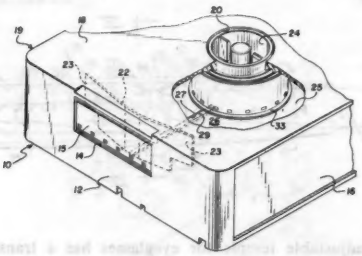
DISENGAGEABLE ANTI-BACKUP MECHANISM FOR A FILM CARTRIDGE

James L. Almstead, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 7, 1971, Ser. No. 141,324

Int. Cl. G03b *23/06, 27/62*

U.S. Cl. 352—78 R **6 Claims**



A film cartridge includes an anti-backup mechanism for preventing rotation of the take-up spool when the cartridge is out of a camera and the mechanism is disengageable for permitting rotation of the take-up spool when the cartridge is loaded in the camera. In a preferred embodiment, the mechanism comprises a latching member having a detent portion and mounted for movement transverse to the axis of rotation of the spool between a first, engaged position wherein the detent portion engages the spool to prevent rotation thereof, and a second, disengaged position wherein the detent portion is disengaged from the spool to permit rotation thereof. The latching member is secured to a spring which is actuated through an exposure aperture in the cartridge by a camera member so that if the camera has a reversible film drive, "fade and lap dissolve" photographic sequences are possible.

3,705,764

MOTION PICTURE CAMERA FOR THE MAKING OF EXPOSURES WITH FIXED AND VARIABLE EXPOSURE TIMES

Herbert Reinsch, Kongen, Germany, assignor to Robert Bosch Pholokino GmbH, Stuttgart, Germany

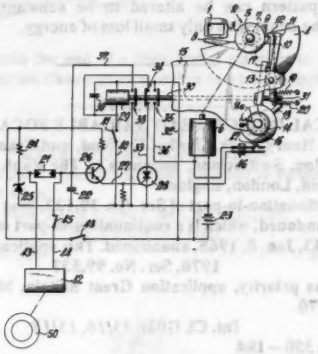
Filed Nov. 29, 1971, Ser. No. 202,761

Claims priority, application Germany, Dec. 5, 1970, P 20 60 026.4

Int. Cl. G03b *17/46*

U.S. Cl. 352—121 **13 Claims**

A motion picture camera wherein the shutter is adjustable by a knob between a first position in which it shields the film from scene light upon completion of each of its cycles and a second position in which it exposes the foremost unexposed film frame to scene light upon completion of each cycle. The film is transported by an intermittent which is driven by a motor serving to move the shutter through a cycle during each transport of the film by the length of a frame. When the shutter is adjusted to assume its second position, the motor is operated by an electric timer which transmits signals for energization of an electromagnet at intervals whose length is a function of scene brightness. The armature of the electromagnet starts the motor which causes the intermittent to advance the film by the length of a frame and which also causes the shutter to complete a cycle in response to each energization of the electromagnet. This enables the camera to make any desired number of successive time lapse exposures with "long" exposure times (e.g., in the range of one or more seconds or minutes), always as a function of scene brightness.



3,705,765

APPARATUS FOR USE IN FOCUSSING IMAGES

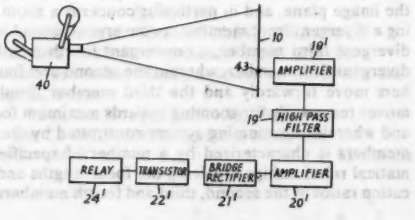
David Fenton Fenner, Dunstable, England, assignor to National Research Development Corporation, London, England

Filed Jan. 23, 1970, Ser. No. 5,283

Claims priority, application Great Britain, Jan. 23, 1969, 3,738/69

Int. Cl. G03b *3/00*

U.S. Cl. 353—101 **21 Claims**



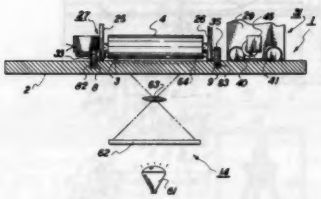
Apparatus for focussing images on screens in which a strip of the image is scanned by a radiation-sensitive device. The well-defined edges of a focussed image produce high-frequency components in the output of the radiation sensitive device which are absent when the image is out of focus. Scanning is produced by deflection coils of a television camera or by the pull-down mechanism of a projector which allows some radiation to reach the screen during pull-down. The focus may be determined in two planes, one in front of and the other behind the screen whereby an indication of the direction in which the lens should be moved to focus the image on the screen is given.

3,705,766

PHOTOELECTROPHORETIC APPARATUS

Raymond K. Egnaczak, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 28, 1970, Ser. No. 84,714
Int. Cl. B01k 5/00; G03g 15/04
U.S. Cl. 355—3 15 Claims



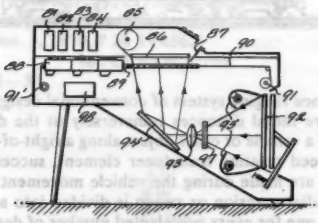
A photoelectrophoretic ink is spread over a flat transparent plate by a first roller traveling over the plate along a first path. Voltages are coupled to the first roller and plate and radiation is directed onto the ink for forming an image as the roller travels over the plate. A second roller travels over the plate along a path that intersects the first. The first and a third roller are used for image forming, and the second roller is used for image transferring. Web handling mechanisms are provided to feed webs between the rollers and plate as a roller moves over the plate.

3,705,767

ELECTROPHOTOGRAPHIC DEVICE

Yasuo Tamai, and Osamu Fukushima, both of Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 21, 1970, Ser. No. 56,852
Claims priority, application Japan, July 21, 1969, 44/57544
Int. Cl. G03g 15/00
U.S. Cl. 355—4 11 Claims



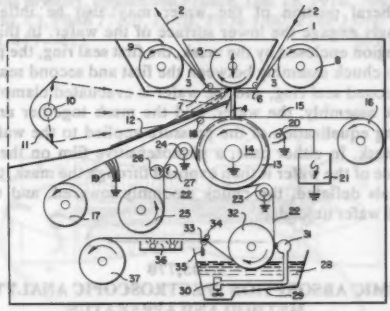
An electrophotographic device for reproducing a colored original characterized by the interconnection of a plurality of processing units each having a corona charging means, a color-decomposing filter of a color corresponding to a unique color constituent of the colored original, and a developing means for applying a toner of a color complementary to the color of the filter, the elements of each developing unit being arranged in the sequence mentioned above. The interconnected processing units are moved across the surface of a stationary electrophotographic sensitive material on which the image of the colored original is projected, the original also being held in a stationary position whereby the colored original is reproduced on the surface of the sensitive material after all processing units are moved thereacross.

3,705,768

COPYING APPARATUS

Roland Moraw, Naurod, and Reinhold Arneth, Budenheim, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed March 9, 1971, Ser. No. 122,408
Claims priority, application Germany, March 10, 1970, P 20 11 241.8
Int. Cl. G03b 27/48, 27/50
U.S. Cl. 355—8 10 Claims



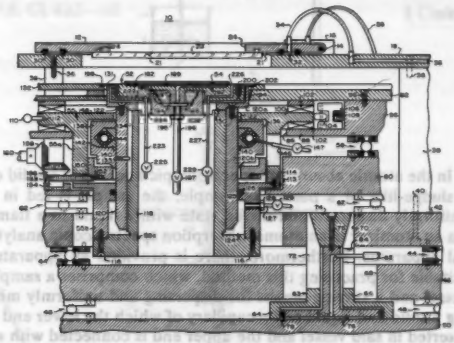
This invention relates to a copying apparatus employing a reflex exposure device in which a master and a copying material are conducted in the same direction past, and at a short distance from, the opposite ends of a bar-like fiber optic element.

3,705,769

OPTICAL ALIGNMENT AND CONTACT PRINTING SYSTEM WITH IMPROVED CHUCK ASSEMBLY

Karl-Heinz Johannsmeier, 555 W. Middlefield Road, Mountain View, Calif.

Filed Nov. 12, 1970, Ser. No. 88,973
Int. Cl. G03b 27/20
U.S. Cl. 355—91 30 Claims



A semiconductor wafer is loaded onto a pivotally-mounted portion of a chuck assembly and held in place by application of a vacuum to the lower surface of the wafer. The chuck assembly is then driven upward under fluid pressure to position the upper surface of the wafer in abutment upon the lower surface of a mask supported on a holder above the chuck assembly and to thereby align these surfaces in parallel planes. After this parallel plane alignment operation, the chuck assembly is lowered and moved relative to the mask holder to align a pattern on the upper surface of the wafer with a corresponding pattern on the lower surface of the mask. Once this pattern alignment operation has been completed, the

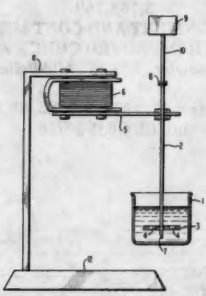
chuck assembly is again driven upward under fluid pressure to position the upper surface of the wafer in abutment upon the lower surface of the mask. A first normally retracted seal ring supported by the chuck assembly around the wafer is then inflated to sealingly engage the lower surface of the mask. The region enclosed by the mask, the first seal ring, and the chuck assembly is thereupon evacuated clamping the chuck assembly, the wafer, and the mask together and permitting equalization of the pressure applied to the chuck assembly and the mask. A second normally retraced seal ring supported by the chuck assembly within the first seal ring beneath a peripheral portion of the wafer may also be inflated to sealingly engage the lower surface of the wafer. In this case, the region enclosed by the mask, the first seal ring, the portion of the chuck assembly between the first and second seal rings, the second seal ring, and the wafer is evacuated clamping the chuck assembly, the wafer, and the mask together and permitting equalization of the pressure applied to the wafer and the mask. In either case, a photosensitive film on the upper surface of the wafer is then exposed through the mask, the seal or seals deflated, the chuck assembly lowered, and the exposed wafer unloaded.

3,705,770

ATOMIC ABSORPTION SPECTROSCOPIC ANALYTICAL METHOD AND APPARATUS

Masayuki Kashiki, Souka, Japan, assignor to Maruzen Oil Company Limited, Osaka, Japan

Filed Nov. 9, 1970, Ser. No. 87,662
Claims priority, application Japan, Nov. 8, 1969, 44/89599
Int. Cl. G01n *1/00, 1/10*
U.S. Cl. 356—36 **6 Claims**



In the atomic absorption spectroscopic analysis of a solid or a sludge-like or a paste-like sample, the sample is fed in a uniformly dispersed and mixed state with a liquid to a flame via an atomizer in an atomic absorption spectroscopic analytical apparatus. Furthermore, there is provided an apparatus suitable for practising this method, which comprises a sample vessel and a stirring means for dispersing and uniformly mixing a solid and liquid and a capillary of which the lower end is inserted in said vessel and the upper end is connected with an atomizer.

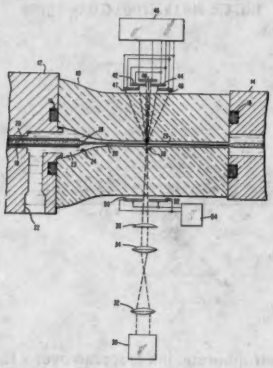
3,705,771

PHOTOANALYSIS APPARATUS

Mitchell Friedman, Yorktown Heights; Louis A. Kamentsky, Briarcliff Manor, and Isaac Klinger, Yorktown Heights, all of N.Y., assignors to Bio/Physics Systems, Inc., Katonah, N.Y.

Filed Jan. 14, 1970, Ser. No. 2,750
Int. Cl. G01n *21/26*
U.S. Cl. 356—39 **38 Claims**

A narrow beam of light is directed through an optical chamber to intersect a thin stream of small particles to be optically analyzed. At least two photoresponsive pick-up elements are positioned at different angular positions with respect to



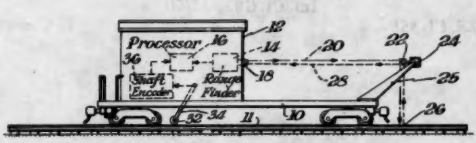
the beam to simultaneously detect different optical reactions of each particle to the beam illumination.

3,705,772

PROFILE DETERMINING METHOD AND SYSTEM

Henry E. Andreas, Wilmington, Del., assignor to Sci-Tek Computer Center, Inc.

Filed April 20, 1971, Ser. No. 135,556
Int. Cl. G01c *3/08*
U.S. Cl. 356—5 **16 Claims**



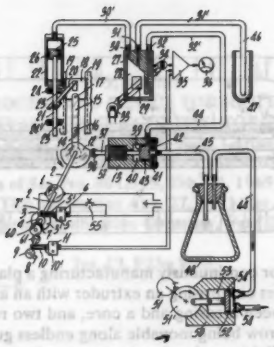
A distance ranging system of conventional design is utilized to measure radial distances transversely to the direction of motion of a vehicle or other object along a right-of-way. Using a high speed rotating transducer element, successive radial scansions are made during the vehicle movement. Each successive radial scansion or sweep is divided into segments or channels, one for every preselected number of degrees of arc in the swept field under examination. At least one channel covers every portion of the swept field. The range information for corresponding arcuate portions or channels of each succeeding revolution or sweep is compared with that previously stored information for such channel and the minimum range information retained for each of the channels. Thus, with each sweep or revolution of the ranging device, new data for each channel is individually compared with the data already residing in each channel. If the new distance measured is less than the distance previously measured and stored for this channel, this new measurement information is then stored and the old information discarded. Simultaneously therewith, lineal distance information as to the location of each minimum range point can be recorded in separate storage area. The process continues for each right-of-way to be measured at which time the operator transfers the stored information to be transferred to paper tape or other storage.

3,705,773

METHOD AND APPARATUS FOR CONVEYING LIQUIDS TO BE ANALYZED TO AN AUTOMATIC SPECTROPHOTOMETRICAL READING CUVETTE

Guido Vicario, Piazza Guilio Cesare, Milan, Italy

Filed Feb. 5, 1971, Ser. No. 112,860
Int. Cl. G01j 3/46
U.S. Cl. 356—180 9 Claims



Method and apparatus for carrying out spectrophotometrical and colormetrical tests, wherein by a syringe a first predetermined amount of liquid is drawn from a first container and introduced into a second analysis container, and then ejected by a vacuum pump to wash said second container, then by said syringe a second metered amount of liquid for test operations is introduced into said second container, then ejecting the analyzed liquid by said vacuum pump. The apparatus comprises means for continuous cyclic operation, for enabling at a desired time the measuring means for the measures to be carried out.

3,705,774

WRITING INSTRUMENT

Werner Kranich, Am Hopfengarten 17, D-8501 Rosstal near Nuremberg, Germany

Filed Aug. 30, 1971, Ser. No. 176,032
Claims priority, application Germany, Sept. 2, 1970, P 20 43 495.1; Dec. 3, 1970, P 20 59 456.3
Int. Cl. B43k 27/08
U.S. Cl. 401—33 16 Claims

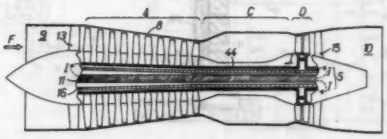
This invention relates to a writing instrument, particularly a ball point pen having a plurality of writing members. A writing member is selected by depressing a pressure member, inclining the instrument in a certain direction and then releasing the pressure member.

3,705,775

GAS TURBINE POWER PLANTS

Christian Paul Gilbert Rioux, Antony, France, assignor to Societe Nationale d'Etude et Construction de Moteurs d'Aviation, Paris, France

Filed Jan. 14, 1971, Ser. No. 106,380
Claims priority, application France, Jan. 15, 1970, 7001437
Int. Cl. F04b 17/00, 35/04; F02k 3/00; F16c 35/00
U.S. Cl. 417—411 20 Claims



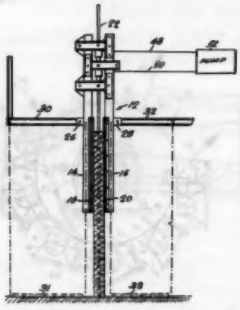
A gas turbine power plant comprising a compressor, a turbine and a system for transmitting the drive from the turbine to the compressor, wherein the transmission system comprises at least one homopolar electrical machine connected to the turbine and operating as generator, and at least one homopolar electrical machine connected to the compressor and operating as motor, wherein this motor is supplied with electrical current from the said generator.

3,705,776

APPARATUS FOR SLIP-FORMING

Rolf Anders Johansson, 3575 Perron Boulevard, Apt. 8, Chomedey, Laval, Quebec, Canada

Filed Dec. 9, 1970, Ser. No. 96,434
Int. Cl. B28b 1/14
U.S. Cl. 425—65 5 Claims

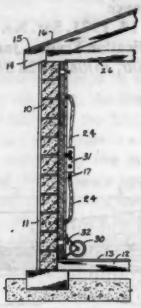


A mold assembly used in the construction of concrete walls and including two leg members carrying opposing spaced form panels within which concrete is poured. Thinner walls may now be erected by alternately (instead of synchronously) raising the form panels. Jacks operating on transversely extending cross-members secured to the leg members cooperate with gripping members climbing along the vertical rod extending in the concrete to alternately raise the two form panels.

3,705,777
APPARATUS FOR COATING BUILDING WALL WITH FOAM

Henry J. Witkowski, 5625 Each Lake Road, Erie, Pa.

Filed Sept. 4, 1969, Ser. No. 855,210
Int. Cl. B28b 3/10
U.S. Cl. 425—110 2 Claims

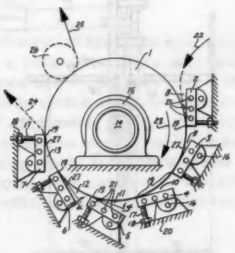


This specification discloses an apparatus for coating walls of buildings, The forms are rigid sheets with tubes of exactly the same length as the thickness of the desired coating. Nails driven in the walls extend through these tubes. A wedge placed under the nail head holds the sheets to the walls. The foaming material is sprayed in the space between the sheet and the wall. The foam will adhere to the wall and when the sheet is removed, a smooth plasterlike will remain, or a pattern resembling wood grain, brick or any other desired finish. The foam may be sprayed on the floor and carpet or linoleum placed over it. A drop ceiling may be placed below the roof and the walls painted any color desired.

3,705,778
PLASTIFYING APPARATUS

Heinrich Collin, Munich, Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed March 12, 1970, Ser. No. 18,903
Claims priority, application Germany, March 13, 1969, P 19 12 779.8
Int. Cl. B29d 7/02
U.S. Cl. 425—224 20 Claims

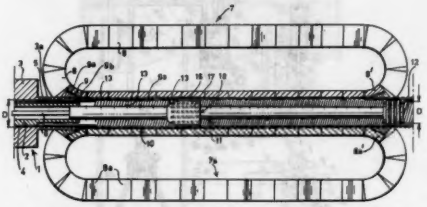


A plastifying apparatus is disclosed. A rotatable roller has arranged angularly spaced with reference to its periphery a plurality of gap-forming elements each of which defines with the periphery a wedge-shaped gap which tapers in direction of rotation of the roller. Feed means feeds material to be plastified into the first one of the gaps for successive movement through this and the following gaps as the roller rotates, whereby the material undergoes successive plastification steps.

3,705,779
DEVICE FOR MANUFACTURING A PLASTIC TUBE WITH TRANSVERSE GROOVES

Cornelis van Zon, Zwolle, Netherlands, assignor to Industriele Onderneming Wavin N.V., Zwolle, Netherlands

Filed Dec. 21, 1970, Ser. No. 100,302
Claims priority, application Netherlands, Dec. 22, 1969, 6919232
Int. Cl. B29c 17/07
U.S. Cl. 425—326 9 Claims

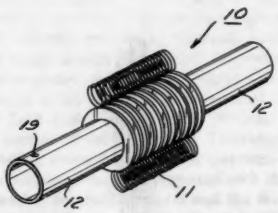


A device for continuously manufacturing a plastic tube with helical grooves comprising an extruder with an annular nozzle situated between a casing and a core, and two rows of mould halves, each row being movable along endless guide paths extending parallel to each other in an operative track, opposite mould halves in this track completing one the other by their mould cavities so as to form a hollow mould, the core of the annular nozzle being provided with a continuous bore for introducing a gaseous pressure between the annular nozzle and closing means consisting of a number of discs of flexible material, whereby the discs have a diameter such that helical grooves are closed when a plastic tube is provided with grooves in the moulds.

3,705,780
APPARATUS FOR MAKING FLEXIBLE TUBING WITH ANNULAR CORRUGATIONS

Vance M. Kramer, 402 E. Baindary Road, Perrysburg, Ohio, and Lawrence W. Carlton, 354 Seabee Ave., Naples, Fla.

Filed Oct. 9, 1970, Ser. No. 79,394
Int. Cl. B29c 17/07
U.S. Cl. 425—389 5 Claims



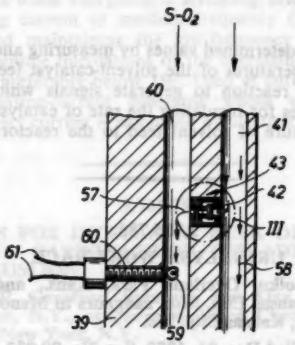
Apparatus for making flexible tubing with annular corrugations and uniform wall thickness. The apparatus includes a tubular cylindrical mandrel adapted to receive a sleeve of extruded rubber, and an axially extensible external form adapted to be received over the mandrel and sleeve. The form includes a plurality of axially spaced disk-like elements, each having a circular opening coaxial with the respective circular openings of the other elements, and a plurality of resilient extensible

helical springs spaced about the axis of the openings. Each spring is connected to each disk-like element to support the elements in uniformly spaced parallel relation to one another to accommodate generally uniform increase in the axial spacing between said elements when the springs are axially extended. The mandrel has radial ports so that the sleeve may be expanded by internal pressure to make a preliminary impression in the uncured rubber caused by the edges of the circular openings of the disk-like elements.

3,705,781
PROCESS AND DEVICE FOR IGNITING OXYACETYLENE CUTTING TORCHES

Georg Adam Roder, Frankfurt am Main, Germany, assignor to Messer Griesheim GmbH, Frankfurt/Main, Germany

Division of Ser. No. 801,695, Feb. 24, 1969, Pat. No. 3,627,457. This application Aug. 27, 1971, Ser. No. 175,607
Claims priority, application Germany, Feb. 24, 1968, P 17 29 894.1
Int. Cl. F23q 9/08
U.S. Cl. 431—6 **6 Claims**



A process and device for igniting autogenous cutting torches, particularly in multi-torch cutting machines, includes conducting the fuel gas mixture into the cutting oxygen canal or into an auxiliary canal connected with the cutting oxygen canal where the ignition takes place.

3,705,782
DESTRUCTION OF OIL SLICKS

Roger F. Rensvold, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

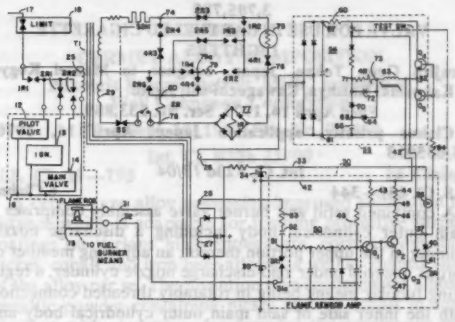
Filed July 22, 1971, Ser. No. 165,354
Int. Cl. F23d 3/18
U.S. Cl. 431—7 **4 Claims**

An oil slick is destroyed by applying thereto finely divided particles of a compound capable of generating a combustible gas, upon contact with water, allowing the particles to contact the underlying body of water so that bubbles of combustible gas rise through the oil film and admix therewith, so as to enhance the combustibility of the oil, and then igniting the oil-gas mixture to burn and destroy the film, e.g. calcium carbide to form acetylene gas.

3,705,783
BURNER SAFEGUARD CONTROL APPARATUS

James S. Warren, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed July 21, 1971, Ser. No. 164,719
Int. Cl. F23q 9/08
U.S. Cl. 431—46 **4 Claims**

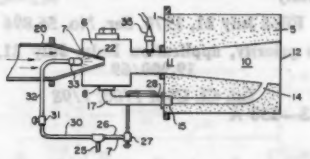


A fuel burner control system which includes a flame detecting unit and an electrically heated safety switch for safety starting and operating a fuel burner. The system includes a control relay connected in a unique and novel way to lock out and not recycle the system in the event of a loss of flame signal after the system has properly been started. The system does, however, recycle in the event of a power failure by using a fast dropout third relay.

3,705,784
LIQUID FUEL BURNER HAVING REDUCED THERMAL STRESS AND RAPID START-UP TIME

Robert Reichhelm, Lancaster, and Albert Morrison, Jr., Leola, both of Pa., assignors to Burnham Corporation, Irvington-on-Hudson, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,212
Int. Cl. F23m 9/06
U.S. Cl. 431—116 **14 Claims**



A burner for burning gasified liquid fuel such as oil, in which the fuel is gasified by being mixed with hot burned gases drawn from the combustion chamber, is provided in which the normal thermal stresses found in such burners due to the return of the hot burned gases for gasifying are substantially reduced and, at the same time, start-up time is reduced. Minimization of the thermal stresses is accomplished by utilizing the heat of vaporization of the oil or other fuel to cool the hot returning gases, and so limit thermal expansion, by having the gasification of the fuel commence close to the hot gas outlet of the burner, rather than at a more remote distance, such

as a gasification chamber. This permits elimination of the gasification chamber, which normally has been required to provide a preheating area for the oil, and so further reduces stresses. With such elimination, rapid start-up is provided by preliminarily burning ungasified fuel introduced by the air and fuel system of the principal unit.

3,705,785

VALVE FOR USE IN GAS FUELED CIGARETTE LIGHTERS

Kenjiro Goto, Tokyo, Japan, assignor to Mansei Kogyo Kabushiki Kaishya, Kawaguchi-shi, Japan

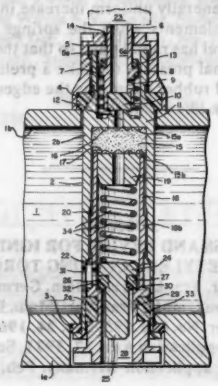
Filed April 14, 1971, Ser. No. 133,889

Claims priority, application Japan, April 14, 1970, 45/035913

Int. Cl. F23d *13/04*

U.S. Cl. 431—344 **6 Claims**

A combined refill and burner valve assembly comprises a main outer cylindrical body including a discharge nozzle cylinder in the upper portion thereof, an adjusting member of porous material under said discharge nozzle cylinder, a regulating tubular means being in rotatably threaded connection with the inner side of said main outer cylindrical body and being in resilient contact with said adjusting member in the tip portion thereof, said regulating tubular means having a valve member adapted to serve as a filling valve in its lower portion



near to an opening accommodated to receive a connecting tube of a fuel charging container.

CHEMICAL

3,705,786

CORROSION INHIBITION WITH METHYLENE BIS-BENZOIC ACID

Saul Kaye, Evanston, Ill., assignor to Ventron Corporation, Beverly, Mass.

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,174

Int. Cl. C23f *11/12*

U.S. Cl. 21—2.7 **4 Claims**

This application is directed to corrosion inhibition of ferrous materials in an aqueous environment by employing 3,3′-methylene bis-benzoic acid.

3,705,787

METHOD FOR REGULATING THE TEMPERATURE AND THE CONVERSION IN A POLYMERIZATION REACTOR AND APPARATUS SUITABLE TO REALIZE THE SAME

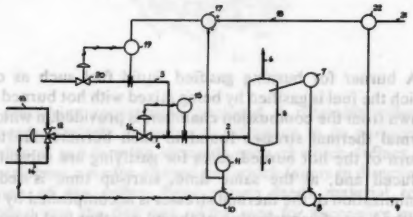
Roberto Carli, Milan, and Silvano Gordini, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Filed July 21, 1970, Ser. No. 56,896

Claims priority, application Italy, July 21, 1969, 19,900/69

Int. Cl. C08f *1/00, 1/98*

U.S. Cl. 23—230 A **3 Claims**



A continuous polymerization process wherein the process temperatures and conversion are automatically maintained at predetermined values by measuring and comparing the temperatures of the solvent-catalyst feed and the products of reaction to generate signals which actuate control valves for regulating the rate of catalyst feed and the temperature of solvent feed to the reactor.

3,705,788

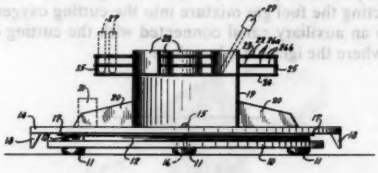
URINALYSIS WORK RACK

Gary A. Kolko, Overland Park, Kans., and Clifford Brown, Kansas City, Mo., assignors to Menorah Medical Center, Kansas City, Mo.

Filed Dec. 21, 1970, Ser. No. 99,923

Int. Cl. G01n *1/16, 1/18*

U.S. Cl. 23—259 **5 Claims**



A laboratory rack to aid in urinalysis sample handling and identification. Radially extending dividers are mounted on a rotatable turntable to provide sample compartments for receiving specimen beakers. Above the dividers, and of lesser diameter than the turntable, is a circular multitier deck having a plurality of holes therein arranged to hold two test tubes in alignment with and above each sample compartment. The central portion of the deck is equipped with cylindrical sleeves for retaining urinalysis test supplies and equipment.

3,705,789

METHOD FOR FLOATING ZONE MELTING

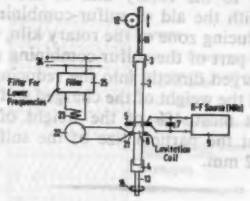
Wolfgang Keller, Pretzfeld, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Apr. 13, 1967, Ser. No. 630,643

Claims priority, application Germany, Apr. 15, 1966, S 103,207

Int. Cl. B01j 17/10

U.S. Cl. 23—301 SP 1 Claim



Floating zone melting of a vertically mounted rod is performed while energizing a levitating field winding by alternating current of medium frequency (500 Hz.–500 kHz.) and maintaining the low-frequency (below 300 Hz.) amplitude fluctuations of the energizing current below 5%, preferably below 1%. Used as current source is an alternating-current generator whose excitation or feeder direct current is smoothed by electronic filtering.

3,705,790

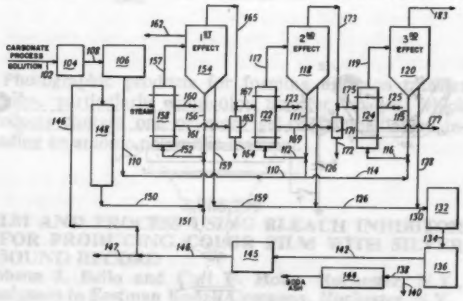
PROCESS FOR INCREASING BULK DENSITY OF SODIUM CARBONATE BY THE ADDITION OF CALCIUM ION

Norman R. Garofano, Syracuse, and Alan G. Follows, Camillus, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 1, 1970, Ser. No. 94,141

Int. Cl. C01d 7/00

U.S. Cl. 23—302 15 Claims



Invention relates to an improved process for the preparation of sodium carbonate precursor crystals by a crystallization process which involves forming a first crop of said carbonate precursor crystals from a substantially saturated carbonate process solution and providing in the mother liquor separated from said first crop of crystals a sufficient amount of calcium ions such that when the mother liquor is subjected to crystallization at a temperature higher than that employed to obtain the first crop of said precursor crystals, a second crop of sodium carbonate precursor crystals of improved quality is obtained.

3,705,791

CERMET ALLOY COMPOSITION

Nikolajs Bredzs, Detroit, Mich., assignor to Wall Colmonoy Corporation

Filed Sept. 18, 1970, Ser. No. 73,460

Int. Cl. B32b 15/00

U.S. Cl. 29—195 16 Claims

A cermet-type alloy possessing improved sulfidation resistance which is adaptable for forming protective surface coatings on various high-temperature, corrosion-resistant nickel, cobalt and iron base alloys, as well as shaped parts of the alloy per se. The invention also encompasses a novel metallic powder containing nickel and/or cobalt in combination with chromium for forming the continuous matrix of the resultant alloy, as well as titanium and/or zirconium as the reactive metal constituents which are adapted to undergo an exothermic reaction with boron upon fusion of the powder mixture at an elevated temperature in a substantially inert atmosphere, thereby forming the corresponding borides of the reactive metals in situ, which are subsequently precipitated as uniformly dispersed discontinuous phases in the continuous phase of the base alloy matrix. In addition, the particulated mixture further contains a controlled proportion of a finely-particulated refractory oxide comprised of alumina which similarly is dispersed as discrete phases in the continuous base alloy matrix at the completion of the exothermic reaction, forming a cermet-type alloy which possesses exceptional resistance to sulfidation and oxidation attack at elevated temperatures.

3,705,792

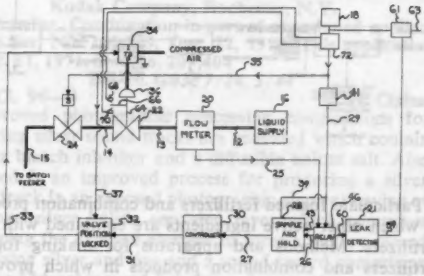
LIQUID FLOW PROPORTIONING SYSTEM FOR METERING INTO A GLASS BATCH

Homer D. F. Peters, Sylvania, Ohio, assignor to Owens-Illinois, Inc.

Filed June 14, 1971, Ser. No. 152,545

Int. Cl. C03b 3/00

U.S. Cl. 65—134 13 Claims



A liquid flow proportioning system, particularly useful for metering caustic soda into a glass batch, in which a

flow control valve is held in a fixed position during periods of no flow to avoid transient effects upon the resumption of liquid flow. The control system also holds a set point feedback controller in a fixed operational mode during periods of no flow and additionally includes a system leak detector, a failure of flow alarm and a full flow alarm.

3,705,793

CHEMICAL SOIL IMPROVER

Konstantin Alexandrovich Mikhelis and Alexandr Sergeevna Fomina, Tallin, Kirill Vladimirovich Murumets and Yalmar Semenovich Ulanen, Kiviyli, Anatoly Mikhailovich Kotov, Timofei Mikhailovich Volkov and Boris Semenovich Itsikson, Moscow, Raivo Alexandrovich Suurmaa and Paavo Yaanovich Viks, Kiviyli, and Georgy Grigorievich Berestovsky, Kazakhskaya, U.S.S.R., assignors to Slantsekhimichesky Kombinat "Kiviyli" U.S.S.R., Kiviyli, Estonskoi SSR

No Drawing. Filed Nov. 20, 1969, Ser. No. 878,555
Int. Cl. C05f *11/00*
U.S. Cl. 71—24 15 Claims

A chemical soil improver noted for its complex effects and comprising tar obtained by low-temperature carbonization of caustobioliths.

Depending upon climatic conditions and physico-chemical characteristics, the following additives may be incorporated into said soil improver: elemental sulfur, Formalin, wastes of oil shale processing into carboxylic acids, surfactants or pyrite cinder.

The chemical soil improver is primarily intended for soil stabilization or planting, for the control of harmful soil organisms and weeds, for pre-emergence control of weeds, and also for increasing the yields of diverse crops in all soil and climatic zones.

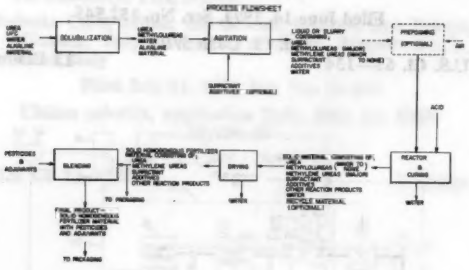
This invention relates to soil improvers of chemical action.

3,705,794

FOAMED FERTILIZERS AND COMBINATION PRODUCTS

Richard H. Czurak, Marysville, and Robert M. Thompson, Richwood, Ohio, assignors to The O. M. Scott and Sons Company, Marysville, Ohio

Filed Aug. 15, 1969, Ser. No. 850,489
Int. Cl. C05b *15/00*
U.S. Cl. 71—29 23 Claims



Particulate foamed fertilizers and combination products in which other active ingredients are combined with such fertilizers. Methods and apparatus for making foamed fertilizers and combination products in which provision is made for combining ingredients, curing, drying, and comminuting the material thus obtained, separating and agglomerating fines and adding them to the comminuted product, and incorporating active ingredients into the comminuted product.

3,705,795

PROCESS OF DIRECTLY REDUCING MATERIALS CONTAINING IRON OXIDE IN A ROTARY KILN

Günter Heitmann, Frankfurt am Main, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Filed Feb. 5, 1969, Ser. No. 796,905
Claims priority, application Germany, Feb. 9, 1968, P 15 83 955.1
Int. Cl. C21b *13/08*
U.S. Cl. 75—36 12 Claims

A process of producing low-sulfur sponge iron by a direct reduction of materials containing iron oxide in a rotary kiln with the aid of solid carbonaceous reducing agent supplied to the rotary kiln at the discharge end thereof, and with the aid of sulfur-combining solids supplied to the reducing zone of the rotary kiln, characterized in that at least part of the sulfur-combining solid which is required is charged directly into the reducing zone of the rotary kiln and the weight of the charged sulfur-combining substance is at most 4% of the weight of the charged ore and in that the particle size of the sulfur-combining solids is up to 2 mm.

3,705,796

CONTACT MATERIAL

Hiroaki Takahashi and Toshito Hara, Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sept. 24, 1970, Ser. No. 75,041
Claims priority, application Japan, Sept. 29, 1969, 44/77,616
Int. Cl. C22c *5/00*
U.S. Cl. 75—173 R 2 Claims

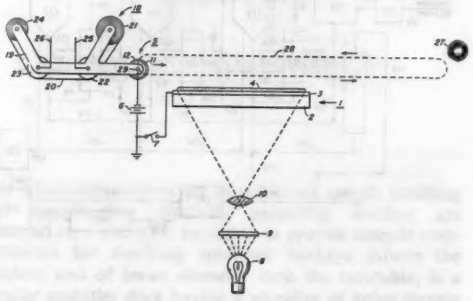
Silver-zinc solid solution alloys used for contact materials have the disadvantage that they form zinc oxide in an oxidizing atmosphere. This disadvantage is obviated by adding aluminum to the solid solution. The atom percentages of zinc and aluminum are 5 to 36% and 0.5 to 5%, respectively, the remainder being silver or an alloy, the main constituent of which is silver.

3,705,797

FIXING PROCESS FOR PHOTOELECTROPHORETIC IMAGING

Vsevolod S. Mihajlov and Leonard M. Carreira, Penfield, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Continuation of application Ser. No. 808,921, Mar. 20, 1969, which is a continuation-in-part of applications Ser. No. 459,860, May 28, 1965, Ser. No. 677,706 and Ser. No. 677,707, both Oct. 24, 1967, all now abandoned. This application Feb. 18, 1970, Ser. No. 12,364
Int. Cl. G03g *13/22*
U.S. Cl. 96—1 R 9 Claims



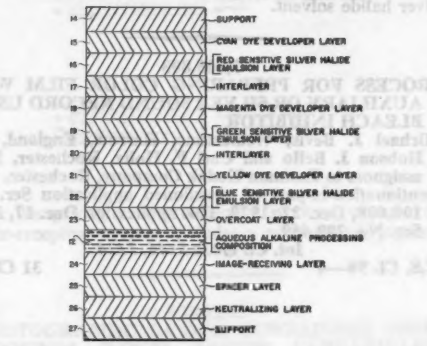
Methods and apparatus for photoelectrophoretic imaging utilizing thermo-adhesive layers for image transfer and fixing.

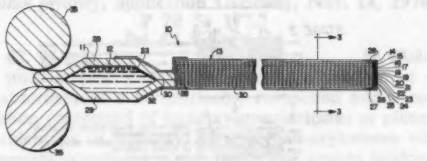
3,705,798

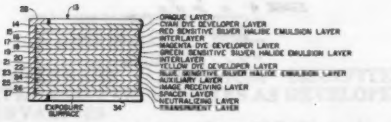
PHOTOGRAPHIC COLOR DIFFUSION TRANSFER UNITARY ELEMENTS COMPRISING AN EMULSION LAYER CONTAINING POLYVINYL-HYDROGEN-PHTHALATE THEREIN

Peter O. Kliem, Weston, and Jerome L. Reid, Natick, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 6, 1970, Ser. No. 78,408
Int. Cl. G03c 7/00, 5/54, 1/40
U.S. Cl. 96—3 **4 Claims**







Photographic products for forming diffusion transfer images, particularly multicolor transfer images, which products contain one or more gel-containing layers including an anionic polymeric material.

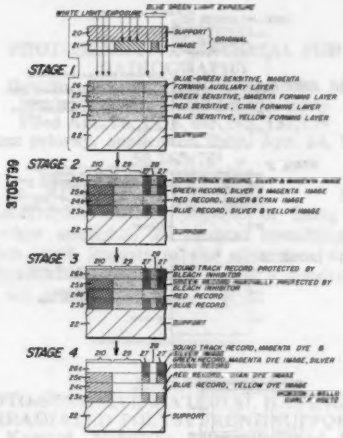
3,705,799

FILM AND PROCESS USING BLEACH INHIBITOR FOR PRODUCING COLOR FILM WITH SILVER SOUND RECORD

Hobson J. Bello and Carl F. Holtz, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of abandoned application Ser. No. 100,609, Dec. 22, 1970. This application Dec. 17, 1971, Ser. No. 209,362
Int. Cl. G03c 5/44, 7/24
U.S. Cl. 96—4 **49 Claims**

A novel process of producing a picture record and a silver auxiliary or sound record in an imagewise exposed photographic element comprising a support having coated thereon, on one surface in order from the support, a picture recording photographic image-forming unit comprising silver halide layers and an auxiliary image recording radiation sensitive silver halide layer which does not form an image upon image-forming exposure of the picture recording unit is provided which comprises (A) developing a picture record comprising silver and a nondiffusible dye and an auxiliary image or sound record comprising silver, (B) contacting the auxiliary layer with a ballasted silver bleach inhibitor to adsorb the bleach inhibitor onto at least the silver of the auxiliary image or sound record and (C) removing the bleachable silver images and residual silver halide. Also provided are novel photographic elements similar to the type described above having a plurality of picture recording image-forming units an an auxiliary layer containing a colorless nondiffusible compound which reacts with aromatic primary amine color developing agent and which decreases the rate of diffusion of a ballasted silver bleach inhibitor through the auxiliary layer.



3,705,800

NOVEL PHOTOGRAPHIC PROCESSING COMPOSITIONS AND IMPROVED PROCESSING USING SUCH COMPOSITIONS FOR PREPARING SILVER SOUND TRACKS

William S. Lane, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 100,769, Dec. 22, 1970. This application Dec. 17, 1971, Ser. No. 209,404
Int. Cl. G03c 7/24, 5/44
U.S. Cl. 96—4 **18 Claims**

Improved photographic processing compositions for preparing silver sound tracks are provided which contain a silver bleach inhibitor and a diffusible onium salt. Also provided is an improved process for producing a silver sound track in an exposed photographic element having at least one silver halide emulsion layer which comprises developing the exposed element to form a picture record comprising silver and dye and a sound record comprising silver and bleaching and fixing the element to remove the silver of the picture record which improvement comprises selectively contacting the sound track record prior to bleaching with a mixture of a silver bleach inhibitor and a diffusible onium salt to retain at least a portion of the silver of the silver sound track during the bleaching.

3,705,801

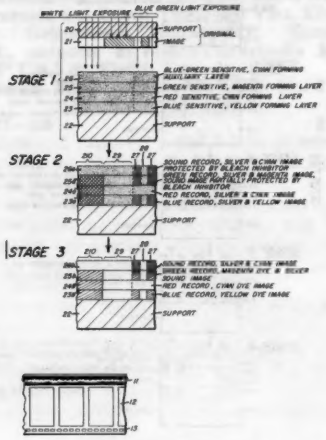
FILM CONTAINING BLEACH-INHIBITOR-RELEASING COMPOUNDS AND PROCESS FOR PREPARING SILVER AUXILIARY AND SOUND RECORDS

Carl F. Holtz, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of abandoned application Ser. No. 100,610, Dec. 22, 1970. This application Dec. 17, 1971, Ser. No. 209,450

Int. Cl. G03c 5/44, 7/24

U.S. Cl. 96—4 64 Claims


WHITE LIGHT EXPOSURE
BLUE GREEN LIGHT EXPOSURE
SUPPORT
IMAGE
ORIGINAL
STAGE 1
BLUE-GREEN SENSITIVE, CYAN FORMING AUXILIARY LAYER
GREEN SENSITIVE, MAGENTA FORMING LAYER
RED SENSITIVE, CYAN FORMING LAYER
BLUE SENSITIVE, YELLOW FORMING LAYER
SUPPORT
STAGE 2
SOUND RECORD, SILVER & CYAN IMAGE PROTECTED BY BLEACH INHIBITOR
GREEN RECORD, SILVER & MAGENTA IMAGE, SOUND IMAGE PARTIALLY PROTECTED BY BLEACH INHIBITOR
RED RECORD, SILVER & CYAN IMAGE
BLUE RECORD, SILVER & YELLOW IMAGE
SUPPORT
STAGE 3
SOUND RECORD, SILVER & CYAN IMAGE
GREEN RECORD, MAGENTA DYE & SILVER SOUND IMAGE
RED RECORD, CYAN DYE IMAGE
BLUE RECORD, YELLOW DYE IMAGE
SUPPORT

Processes and elements are provided for forming separate silver and dye image records, the element comprising a support having coated thereon a picture recording photographic unit comprising at least one silver halide emulsion layer and an auxiliary silver image-producing silver halide emulsion layer, and the process including (1) forming dye and a first silver image in said picture recording unit; (2) reacting the silver halide in said auxiliary layer with a photographic developing agent to form a second silver image and oxidized photographic developing agent; and (3) bleaching and fixing the photographic element to remove the residual silver halide and the first silver image while retaining the second silver image. In accordance with the invention, the auxiliary layer contains at least one nondiffusing compound which releases a ballasted silver bleach inhibitor upon reaction with the oxidized developing agent.

3,705,802

NOVEL PHOTOGRAPHIC PROCESSING COMPOSITIONS AND IMPROVED PROCESSING USING SUCH COMPOSITIONS FOR PREPARING SILVER AUXILIARY AND SOUND RECORDS

John L. Baptista, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 100,776, Dec. 22, 1970. This application Dec. 17, 1971, Ser. No. 209,451

Int. Cl. G03c 5/44, 7/24

U.S. Cl. 96—4 24 Claims

Novel photographic processing compositions for preparing silver auxiliary images and silver sound tracks are provided which contain a ballasted silver bleach inhibitor and a silver halide solvent. Also provided are improved processes for producing a silver auxiliary image or silver sound record in an exposed photographic element comprising a support having coated thereon at least one picture recording photographic silver halide layer and as the light sensitive layer outermost from the support an auxiliary image-recording silver halide layer which does not form an image upon image-forming exposure of the picture recording layer or layers which comprises (A) developing a picture record comprising silver and dye and an auxiliary or sound record comprising silver, (B) contacting the auxiliary layer which a ballasted silver bleach inhibitor to adsorb the bleach inhibitor onto at least the silver of the auxiliary layer and (C) removing the bleachable silver and the residual silver halide which improvement comprises carrying out step (B) in the presence of a silver halide solvent.

3,705,803

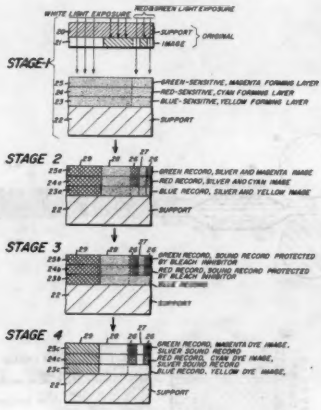
PROCESS FOR PREPARING COLOR FILM WITH AUXILIARY OR SILVER SOUND RECORD USING BLEACH INHIBITOR

Michael J. Bevis, Wealdstone, Harrow, England, and Hobson J. Bello and Carl F. Holtz, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of abandoned application Ser. No. 100,608, Dec. 22, 1970. This application Dec. 17, 1971, Ser. No. 209,459

Int. Cl. G03c 5/44, 7/24

U.S. Cl. 96—4 31 Claims



A process is provided for preparing color film having a silver auxiliary or sound record which comprises contacting only the auxiliary or sound record area of an exposed film having such a silver image subsequent to initial development, and prior to bleaching with a silver bleach inhibitor.

3,705,804

DIFFUSION TRANSFER PRODUCTION OF REFLECTION POSITIVE WITH MACROSCOPIC PIGMENT IN RECEPTIVE STRATUM

Leonard C. Farney, Melrose, and Richard J. Haberlin, Weston, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

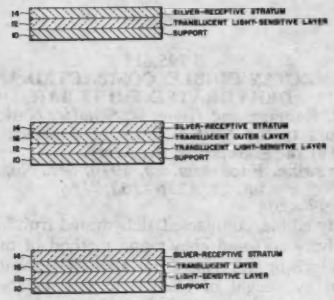
Continuation of abandoned application Ser. No. 723,002, Apr. 22, 1968. This application Apr. 7, 1971, Ser. No. 132,081

Int. Cl. G03c 1/48, 5/54

U.S. Cl. 96—29 R 5 Claims

Photographic products for forming a composite print viewable as a positive silver image, including a silver

halide emulsion layer, an opacifying material in the emulsion layer and/or in an overlying layer, and an outer



layer comprising a silver-receptive stratum, wherein the silver-receptive stratum includes a macroscopic pigment.

3,705,805

PHOTOGRAPHIC LAYERS CONTAINING COMPOUNDS WHICH ABSORB ULTRAVIOLET LIGHT

Fritz Nittel, Cologne, Johannes Sobel, Leverkusen, and Wolfgang Himmelmann, Opladen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 12, 1971, Ser. No. 198,460
Claims priority, application Germany, Nov. 14, 1970, P 20 56 177.7
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 R **10 Claims**

A photographic material comprising a mixture of an UV absorbent of a benzotriazole compound and a condensation compound of hydroxybenzaldehydes or alkoxybenzaldehydes or hydroxyketones or alkoxyketones with compounds containing active methylene groups having a melting point below 60° C.

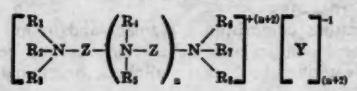
3,705,806

POLYQUATERNARY AMMONIUM BISULFITES, SULFITES AND PYROSULFITES AS DEVELOPER PRESERVATIVES

Donald J. Sykes, Upper Saddle River, N.J., Harry Kroll, Warwick, R.I., and Theron R. Finch, Northvale, N.J. (all % Philip A. Hunt Chemical Corp., Palisades Park, N.J. 07650)

No Drawing. Continuation-in-part of application Ser. No. 646,176, June 15, 1967, which is a continuation of abandoned application Ser. No. 596,474, Nov. 23, 1966. This application Nov. 16, 1970, Ser. No. 90,024
Int. Cl. G03c *5/30*
U.S. Cl. 96—66.4 **26 Claims**

A method of and solution for developing latent images in supported silver halide gelatin layers with the use of an aqueous bath that includes a conventional developing agent or agents and other conventional constituents such as restrainers, anti-foggants, sequestrants, silver halide solvents and gelatin hardeners and which for the developing agent preservative uses a polyquaternary ammonium bisulfite, sulfite or pyrosulfite of the formula



where R_1, R_2, R_3, R_4, R_5, R_6, R_7 and R_8 are selected from the class consisting of alkyls having from 1 to 4 carbon atoms and hydroxyalkyls having from 2 to 4 carbon atoms, where Z is selected from the class consisting of alkylenes having from 2 to 6 carbon atoms, hydroxyalkylenes having from 2 to 6 carbon atoms and dialkylene ethers having from 1 to 3 carbon atoms in each alykylene, where Y is selected from the class consisting of HSO_3^-, one-half $SO_3^=$ and one-half $S_2O_6^=$ and where n is an integer from 0 to 4, the bath also including an alkali in an amount sufficient to provide the bath with a pH of at least 8.

3,705,807

PHOTOSENSITIVE MATERIAL FOR RADIOGRAPHY

Vinicio Busatto, Savona, Italy, assignor to Minnesota Mining and Manufacturing Company

Filed Apr. 26, 1971, Ser. No. 137,179
Claims priority, application Italy, Apr. 24, 1970, 50,263/70
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 R **8 Claims**

A radiographic element capable of being handled under yellow safelights, the element containing a filter dye which itself imparts to the element a density to yellow light of not less than 0.4 and a density to blue light of not greater than 0.1.

3,705,808

PHOTO-SENSITIVE MATERIAL HAVING UV IRRADIATED POLYSTYRENE SUPPORT

Tsuneo Kasugai, Nobuhiko Minagawa, and Hiroyuki Kurabayashi, Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Sept. 8, 1970, Ser. No. 70,556
Claims priority, application Japan, Sept. 8, 1969, 44/71,120
Int. Cl. G03c *1/80*
U.S. Cl. 96—87 R **5 Claims**

A process of preparing a polystyrene support surface for reception of a photographic emulsion layer, comprising applying a sub-coating solution to a surface of a polystyrene support to form a sub-coating layer thereon, said sub-coating solution comprising a solvent or plasticizer for the polystyrene and a resin adherent to the photographic emulsion, and irradiating the support surface with ultra-violet radiation.

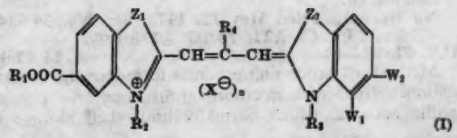
3,705,809

SILVER HALIDE SUPERSENSITIZED PHOTOGRAPHIC EMULSION

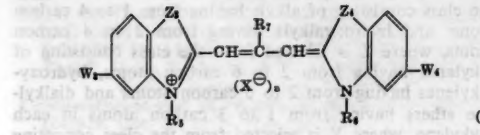
Yoshiyuki Nakazawa, Yashuharu Nakamura, Haruo Takei, Akira Sato, and Tadashi Ikeda, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Oct. 20, 1970, Ser. No. 82,537
Claims priority, application Japan, Sept. 26, 1969, 44/76,684
Int. Cl. G03c *1/14*
U.S. Cl. 96—124 **10 Claims**

A silver halide photographic emulsion containing a combination of sensitizing dyes of the formulae:



and



(II)

Specific compounds are disclosed hereinafter.

3,705,810
COFFEE EXTRACTION
Andrew T. Lendvay, Oakland, N.J.
(2916 Halstead Road, Richmond, Va. 23235)
No Drawing. Continuation of application Ser. No. 653,328, July 14, 1967. This application Aug. 24, 1970, Ser. No. 66,651
Int. Cl. A23f *1/08*
U.S. Cl. 99—71 13 Claims

In the production of soluble coffee, the extraction yield of soluble coffee is increased without flavor impairment by extracting roasted coffee after blending with an additional amount of soluble coffee gum.

3,705,811
PROCESS FOR AVOIDING STALING AND IMPROVING THE QUALITY OF BREAD
Mikihiko Yoshida, Masakazu Mitsuhashi, and Mamoru Hidao, Okayama, Japan, assignors to Hayashibara Company, Okayama, Japan
Filed Feb. 3, 1970, Ser. No. 8,337
Claims priority, application Japan, Feb. 4, 1969, 44/8,559
Int. Cl. A21d *2/18*
U.S. Cl. 99—91 2 Claims

A process which, in breadmaking, shortens the time required for proofing of the dough, appreciably increases the volume of the product, improves the inner texture and avoids staling of the bread, comprises mixing a small amount of low molecular amylose into the wheat flour.

3,705,812
PROCESS FOR MAKING A FRIED ONION PRODUCT
John Bickford Shields, Blackfoot, Idaho, assignor to American Potato Company, San Francisco, Calif.
No Drawing. Filed July 16, 1969, Ser. No. 842,371
Int. Cl. A23l *1/12*
U.S. Cl. 99—100 P 7 Claims

This invention relates to a new fried onion product and the process for its production. Recognizable pieces of dehydrated onion are blended with flavorings and inert starchy food substances or other binders. The blend is then mixed with edible liquid to form an extrudable dough which is shaped to the desired form, such as a stick or ring, and then fried in deep fat. The end fried onion product has novel texture and flavor attributes.

3,705,813
MEAT PROCESSING
Paul W. Vogel, Pekin, and John H. Silliker, Park Forest, Ill., assignors to Meat Technology, Inc., Chicago Heights, Ill.
No Drawing. Filed May 12, 1970, Ser. No. 36,684
Int. Cl. A22c *18/00*; A23b *1/06*
U.S. Cl. 99—194 14 Claims

Methods of processing products to reduce the contamination thereof with microorganisms, especially psychrophilic bacteria, which normally limit shelf storage life of packaged and other meat products under refrigerated conditions.

Special decontamination procedures and apparatus are also provided to decontaminate meat products that have pre-existing population of bacteria on the surfaces thereof. Meat products include both red meats, fish and poultry.

3,705,814
DIRECTLY EDIBLE, COMPACTED AND DEHYDRATED FRUIT BAR
Abdul R. Rahman and Glenn R. Schafer, Natick, Mass., assignors to the United States of America as represented by the Secretary of the Army
No Drawing. Filed Aug. 20, 1970, Ser. No. 65,700
Int. Cl. A23b *7/00, 7/16*
U.S. Cl. 99—204 5 Claims

Directly edible, compacted, dehydrated fruit bars which are relatively soft and chewy and method of making the same comprising applying from about 1 percent to about 5 percent by weight of lecithin to the surface of comminuted fruit particles after dehydration to a moisture content of from about 7 percent to about 14 percent by weight and prior to compression thereof, to form a compacted fruit bar which is directly edible without prior rehydration.

3,705,815
LIME AND SILICA-RICH HIGH ALUMINA CEMENT, AND PROCESS FOR MANUFACTURING SAME
René Alegre and Raymond Allegre, Montelimar, France, assignors to Societe Anonyme dite Ciments Lafarge, Paris, France
No Drawing. Filed Sept. 15, 1971, Ser. No. 180,855
Claims priority, application France, Nov. 9, 1970, 7040245
Int. Cl. C04b *7/32*
U.S. Cl. 106—104 3 Claims

A lime and silica-rich high-alumina cement and the process for manufacturing it.

A lime and silica-rich high alumina cement which consists, in parts by weight, of about:

8 to 10% SiO_2
about 1 to 2% TiO_2
26 to 29% Al_2O_3
14 to 16% Fe_2O_3
0% or traces FeO
45 to 48% CaO

the moduli:

$SiO_2/Al_2O_3+Fe_2O_3$ being in the range of about 0.18 to 0.25
Al_2O_3/CaO from 0.55 to 0.65
Al_2O_3/SiO_2 between about 2.6 and 3.6 and the mineralogical composition containing CA, C_2S, $C_{12}A_7$ and ferrites.

The cement has a broader range of use and its preparation is cheaper.

3,705,816
PIGMENT PREPARATION
Guenther Zwahlen, Dornach, Ernst Reich, Bettingen, and Karl Ewald Schoohf, Dornach, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Filed June 23, 1970, Ser. No. 49,202
Claims priority, application Switzerland, July 2, 1969, 10,135/69; May 14, 1970, 7,203/70
Int. Cl. C08h *17/02*
U.S. Cl. 106—308 7 Claims

Preparations comprising a pigment and/or an optical brightener having pigment characteristics and cellulose which is esterified by both an aliphatic or cycloaliphatic

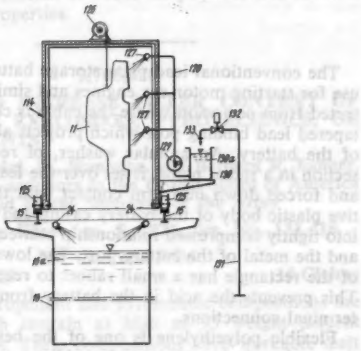
carboxylic acid and acid selected from benzoic, phenylacetic and cinnamic acids, which cellulose ester may, if desired, contain free hydroxyl groups, are useful for coloring lacquers and plastic masses.

3,705,817

METHOD FOR TREATING THE SURFACES OF VEHICLE BODIES

Heinz Dürr, Stuttgart-Feuerbach, Germany, assignor to Otto Dürr, Stuttgart-Zuffenhausen, Germany

Filed July 20, 1970, Ser. No. 56,415
Claims priority, application Germany, July 30, 1969, P 19 38 589.8; June 24, 1970, P 20 31 125.5
Int. Cl. B44d *1/14*; B05c *3/02*
U.S. Cl. 117—49 11 Claims



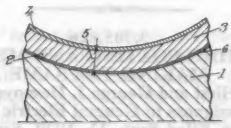
A method and an apparatus for treating the surfaces of articles, and especially for painting automobile bodies or other large elongated articles, essentially consisting in passing the articles while their greater length extends in a vertical direction first through a preliminary treating zone, especially a painting zone. The preliminary treatment preferably comprises an electrochemical dipping process and the painting treatment of an electric dipping process according to the electrophoretic principle. The dip tanks are made of a shape in accordance with the vertical position of the articles to be treated which, while being lifted out of the tanks, are preferably kept moist by additionally spraying the treating liquids thereon which are also contained in the respective tanks underneath.

3,705,818

METHODS OF COATING RUBBING SURFACES AND ELEMENTS COMPRISING SUCH SURFACES

Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Dec. 31, 1969, Ser. No. 889,569
Claims priority, application France, Dec. 31, 1968, 182,897
Int. Cl. C23c *7/00*; B44d *1/16*
U.S. Cl. 117—71 M 7 Claims



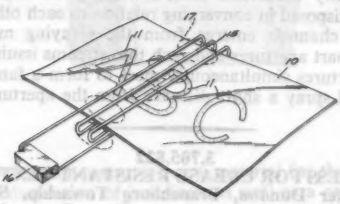
To increase the wear resistance of a rotary piston engine casing envelope the inner surface of the envelope is coated by a keying film and then a resistant sub-layer of an alloy of steel and nickel aluminides, then by a thin wear-resistant layer of nickel or cobalt. The sub-layer is formed by flame-spraying simultaneously 90% to 70% by volume carbon steel wtih 10% to 30% of a mixture of equal parts of nickel and aluminium powders.

3,705,819

DRYING BY INDUCTION HEATING

William C. Heller, Jr., 3521 N. Shepard Ave., Milwaukee, Wis. 53211, and Alfred F. Leatherman, Columbus, and Robert L. Christian, Westerville, Ohio; said Leatherman and said Christian assignors to said William C. Heller, Jr., Milwaukee, Wis.

Continuation-in-part of application Ser. No. 690,883, Dec. 15, 1967. This application June 15, 1970, Ser. No. 46,433
Int. Cl. B41m *7/00*
U.S. Cl. 117—93.2 7 Claims



The drying of inks or other coatings by high efficiency hysteresis-type induction heating of selected oxide particles therein. The thermohysteretic materials used are gamma Fe_2O_3 and CrO_2 which materials may form at least a portion of the pigment for the ink. These materials exhibit a relatively high magnetic saturation flux density and a relatively high coercive force in the preferred low frequency induction heating range of below 5 megacyclyes per second and thus substantial heat can be generated by magnetic hysteresis loss.

3,705,820

TONGUE FOR WIND INSTRUMENTS AND A METHOD FOR PRODUCING SAME

Karl Knotik, Eisenstadt, and Franz Gutlbauer, Baden, Austria, assignors to Osterreichische Studiengesellschaft fur Automenergie Ges. m.b.H., Vienna, Austria

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,220
Claims priority, application Austria, Apr. 21, 1969, 3,840/69
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.31 6 Claims

A tongue or reed for a wind instrument, made of cane or another kind of reed is treated with a resin, especially a synthetic resin. After the tongue has been treated with this resin the same is cured.

3,705,821

PROCESS AND APPARATUS FOR APPLYING POLYURETHANE FOAM-FORMING COMPOSITION

Karl Wilhelm Breer, Cologne, and Erwin Weinbrenner, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of application Ser. No. 683,370, Nov. 15, 1967. This application Aug. 7, 1970, Ser. No. 70,605
Int. Cl. B44d *1/02*
U.S. Cl. 117—105.3 3 Claims

Improved apparatus for spraying a polyurethane foam-forming composition including substrate means onto which the composition is sprayed; means to longitudinally move

the substrate so as to continuously receive said composition spray at least partially on a previously uncovered part thereof whereby to form a continuous foam web; transversing means disposed above the substrate transverse to the direction of movement of the substrate; and spraying means on the traversing means; where the spraying means has a chamber from which polyurethane foam-forming composition is sprayed and has two channel

means leading from the chamber through which foam-forming composition passes, which channel means have a substantially cornerless cross-section, preferably round, and are disposed in converging relation to each other such that the channels emerge from the spraying means as spaced apart apertures and such that streams issuing from both apertures simultaneously meet to form a fan shaped combined spray a short distance from the apertures.

3,705,822

PROCESS FOR CREASE RESISTANT TEXTILES

John Peter Dundon, Branchburg Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application July 7, 1964, Ser. No. 380,915, now Patent No. 3,465,036, dated Sept. 2, 1969. Divided and this application Mar. 5, 1968, Ser. No. 723,971

Int. Cl. D06m *13/00*

U.S. Cl. 117—139.4 **4 Claims**

Crease resistance is imparted to cellulosic textile materials by applying an aqueous solution of a methylolated amide derivative of the formula

$$(XOOC)_mD[CH_2(Y)CO\cdot NH\cdot CH_2OH]_n$$

wherein Y is $—CH_2—$ or $—OCH_2CH_2—$; D is —C—; $—CH_2—O—CH_2—C$ or $—CH_2\cdot N—$, *n* is 2 or 3 and *m* is 4—*n*, and X is hydrogen, alkyl or a monovalent salt-forming atom or group and then drying and curing by the application of heat.

3,705,823

METHOD OF COATING FIBROUS STRUCTURE WITH A MIXTURE OF POLYURETHANE PREPOLYMER AND POLYORGANOSILOXANE

Kenjiro Hosokawa and Michio Ichikawa, Osaka, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed July 30, 1970, Ser. No. 59,721

Claims priority, application Japan, Aug. 5, 1969, 44/61,804

Int. Cl. D06m *15/52, 15/06*; B44d *1/46*

U.S. Cl. 117—161 KP **16 Claims**

Improved fibrous structures such as fibers, yarns, fabrics, made-up clothes and the like, having voluminous hand, durable elasticity, excellent anti-pilling property, shrink-proofness, crease resistance, and other desirable chemical and physical properties, are manufacturable by finishing the fibrous structure with a non-aqueous organic solvent solution of a specified polyurethane prepolymer and a specified polyorganosiloxane together with a polymerization catalyst. Fibers constituting the structure are entirely covered by urethane/organosiloxane copolymer film having an elongation at break of at least 200%, a tensile recovery at 100% elongation of at least 70%, a tensile strength of 1–50 kg./cm.² and a hardness of 5–60°.

3,705,824

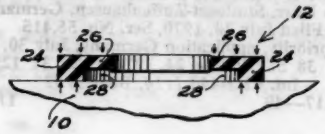
PROTECTIVE SEALING WASHER FOR STORAGE BATTERY

Hugo S. Erickson, 915 Fowler St., Evanston, Ill. 60202

Filed Oct. 5, 1970, Ser. No. 77,872

Int. Cl. H01m *1/02*

U.S. Cl. 136—181 **2 Claims**



The conventional lead plate storage battery in common use for starting motor car engines and similar uses is protected from corrosion where the cable is connected to the tapered lead binding post which projects above the casing of the battery. An annular washer, of rectangular cross section in a radial plane, is set over the lead terminal post and forced down into firm contact with the non-conductive plastic body of the battery casing and simultaneously into tightly compressed relationship between its inner edge and the metal of the battery post. The lower inside corner of the rectangle has a small rabbet to receive viscous oil. This prevents the acid in the battery from corroding the terminal connections.

Flexible polyethylene is one of the best materials for the washer, but conventional molding equipment cannot form the desired final shape without defects in the inner edge, and the pressure needed to force the washer down is likely to break the washer in two.

A blank is molded, which includes the entire washer structure and additional material covering the top of the central opening. Then punching out the additional material leaves a smooth, slippery inner edge that assures easy assembly and a permanent seal that can be opened and reassembled.

3,705,825

GROWTH LAYER OF SEMICONDUCTOR COMPOUNDS PRODUCED BY MELT EPITAXY

Wolfgang Touchy and Eckart Bungenstab, Munich, Germany, assignors to Siemens Aktiengesellschaft

Filed Feb. 10, 1970, Ser. No. 10,234

Claims priority, application Germany, Feb. 19, 1969, F 19 08 277.0

Int. Cl. H01l *7/34, 7/40*

U.S. Cl. 148—1.5 **5 Claims**

Method of producing epitactic growth layers of variable conductance type by use of silicon as the dopant substance with compounds which easily dissociate at the melting point, preferably gallium arsenide, by melt epitaxy. The production of the melt, provided for the growth process, and the growth process per se are effected under vapor pressure of the participating materials in an evacuated reaction vessel.

3,705,826

INSULATING COATING AND METHOD OF MAKING THE SAME

Robert G. Hirst and George J. Desnoyers, Pittsfield, Mass., assignors to General Electric Company

No Drawing. Filed Sept. 23, 1970, Ser. No. 74,509

Int. Cl. C23f *7/26*

U.S. Cl. 148—6.16 **2 Claims**

Electrically insulating coating for strand annealed magnetic silicon steel is composed of an aqueous mixture

of chromium hydroxide, phosphoric acid, and colloidal silica.

3,705,827

NICKEL-IRON BASE ALLOYS AND HEAT TREATMENT THEREFOR

Donald R. Muzyka and Donald K. Schlosser, Reading, Pa., assignors to Carpenter Technology Corporation, Reading, Pa.

Filed May 12, 1971, Ser. No. 142,635

Int. Cl. C21d *1/18, 7/14*

U.S. Cl. 148—142 4 Claims

Precipitation hardened nickel-iron base alloys with or without chromium and cobalt containing columbium, titanium and aluminum are provided by heat treatment with a unique combination of room temperature and elevated temperature properties.

3,705,828

PROCESS TO INCREASE FILLER CONTENT OF CASTABLE EXPLOSIVES, PYROTECHNICS, OR PROPELLANTS

H. William Voigt, Jr., Stanhope, and Bernard R. Banker, Dover, N.J., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Apr. 5, 1971, Ser. No. 131,416

Int. Cl. C06d *5/06*

U.S. Cl. 149—19 15 Claims

Explosive, propellant and pyrotechnic compositions are provided which contain as high as 95 weight percent filler substances. These compositions have workable melt viscosity, notwithstanding their unusually high filler content, and they are readily amenable to casting, molding and pelletizing operations. Also, a method is provided for making such compositions. This method involves separately dissolving the respective components in a fluorocarbon, mixing the resulting solution and removing the fluorocarbon from the resulting admixture by the application of mild vacuum.

3,705,829

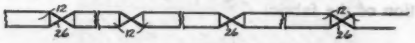
METHOD FOR FASTENING WOOD VENEER SHEETS TOGETHER EDGE TO EDGE

Roderick L. Brenneman, Corvallis, and Daniel M. McLean, Independence, Oreg., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Original application Aug. 13, 1968, Ser. No. 752,285, now Patent No. 3,607,562. Divided and this application Oct. 12, 1970, Ser. No. 80,243

Int. Cl. B32b *21/10*

U.S. Cl. 156—65 5 Claims



Substantially rectangular sheets are fastened together edge to edge by arranging the sheets in spaced relation, arranging a pair of continuous strings, one above and one below the sheets, traversing the strings and the spaced sheets relative to each other, crisscrossing the strings sequentially at each between-sheet space, crowding the sheets together edgewise, and fastening the criss-crossed strings to the sheets, thereby fastening the sheets together in a continuous strip.

3,705,830

PROCESS FOR FINISHING THE SURFACE OF A BUILDING

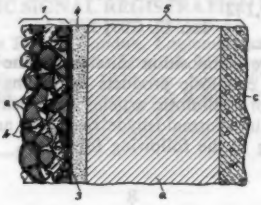
Constantin Gurgui, Vasile Luca, Andrei Eckardt, and Paraschiv Ciulacu, Bucharest, Rumania, assignors to Intreprinderea "Bucuresti" Pentru Extragerea, Prelucrarea si Montarea Marmurei si Pietrei de Constructii, Bucharest, Rumania

Filed Jan. 15, 1969, Ser. No. 791,405

Claims priority, application Rumania, Jan. 20, 1968, 55,669

Int. Cl. E04b *2/10*

U.S. Cl. 156—71 5 Claims



The invention concerns a new material for the finishing and the decoration of buildings, as well as a process and an installation for the manufacture of same.

3,705,831

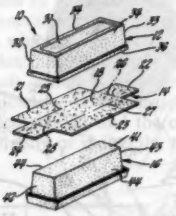
METHOD OF FABRICATING AN INSULATED STORAGE BIN

Robert E. Sayre, Centerville, Lewis B. Campbell, Miamisburg, and Joe P. Pietrzak, Kettering, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 9, 1971, Ser. No. 161,056

Int. Cl. B31f *1/00*

U.S. Cl. 156—227 2 Claims



A method of making an insulated double walled storage bin including the assembly of insulation material between an inner liner and outer shell of the bin, wherein an insulation batt is precut into a flexible blank to define a rectangular center section having side and end panel extensions. The inner liner of the bin is first inverted and the insulation blank placed with its center section aligned on the bottom wall of the liner such that by telescoping the outer shell over the liner the blank panels are simultaneously folded about imaginary boundaries to a position generally normal to the center section to occupy the space therebetween. The liner and shell have a scarf-like joint on their mating edges which is sealed

and bonded by means of a cement material maintaining the insulation blank in its distorted condition therebetween.

3,705,832

PROCESS FOR JOINING CELLULOSE ARTICLES UTILIZING A TWO-PART ADHESIVE, WHEREIN THE FIRST PART IS A PARTIALLY REACTED CONDENSATE OF RESORCINOL AND FORMALDEHYDE, AND THE SECOND PART IS AN OXAZOLIDINE

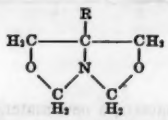
John T. Stephan, Longview, and A. J. Golick, Seattle, Wash., assignors to Commercial Solvents Corporation, New York, N.Y.

No Drawing. Original application Apr. 10, 1969, Ser. No. 815,198. Divided and this application Nov. 12, 1970, Ser. No. 89,142

Int. Cl. C09j *5/04*

U.S. Cl. 156—310 **4 Claims**

An adhesive composition suitable for the manufacture of laminated cellulosic products by joining the surfaces of two or more cellulosic articles comprising a partially fusible resorcinol-formaldehyde resin and an oxazolidine corresponding to the following formula:



where R can be methyl, ethyl or hydroxymethyl.

3,705,833

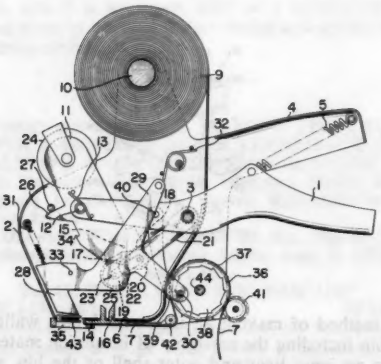
LABELLER

Tokio Wada, 12–15 4-chome Horifune, Kita-ku, Tokyo, Japan

Filed Oct. 2, 1970, Ser. No. 77,420

Int. Cl. B32b *31/00*; B41f *1/08*

U.S. Cl. 156—384 **9 Claims**



A labeller comprising a swing lever and a push-out lever mounted to a frame, a stamp pad and tape turning member, a push-out window adjacent to said member, a stamping means provided on the swing lever, a push-out member at the window provided on the push-out lever, a movable rotor for feeding a tape and an engaging means for performing stamping motion and controlling movement of the push-out lever, whereby separation of the label from the tape and pushing out from the label are consecutively performed by one operation of the swing lever.

3,705,834

CARPET WITH A FOAM POLYURETHANE BACKING

Claude E. Terry, Rockmart, Ga., assignor to Textile Rubber and Chemical Company, Inc., Dalton, Ga.

No Drawing. Continuation-in-part of application Ser. No. 111,860, Feb. 2, 1971. This application Feb. 3, 1971, Ser. No. 112,472

Int. Cl. D03d *27/00*; D04h *11/00*

U.S. Cl. 161—66 **6 Claims**

A tufted carpet is formed by application of a layer of thixotropic polyurethane adhesive backing composition to a primary backing material so that there is substantially complete saturation of the bundle wrap without penetration of the composition through the primary backing to the exposed portion of the tufted material. The polyurethane composition is prepared by mixing together under polymerization conditions water, a polyol with a hydroxyl number less than one hundred, a diisocyanate, a filler and a catalyst, and optionally a surfactant. The polyurethane obtained has a viscosity of between 30,000 and 100,000 cps. at 10 r.p.m. No. 7 spindle Brookfield RVF Viscometer, a pot life of between 20 to 60 seconds and is expandable from about 100 percent to about 400 percent when completely reacted. The polyurethane backing composition is applied to the underside of the primary backing with a doctor blade. Upon heating or allowing to stand at room temperature, the adhesive composition jells and expands. Subsequent to expansion and prior to curing, compressive pressure is applied to the expanded polyurethane backing composition to selectively disintegrate at least a portion of the foamed cells in the polyurethane and optionally form a pattern or design.

3,705,835

COATED FABRICS OF THERMOPLASTIC MATERIALS

Willy H. J. Badrian, Delft, Netherlands, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed May 26, 1971, Ser. No. 147,182

Claims priority, application Great Britain, June 2, 1970, 26,529/70

Int. Cl. B32f *27/12*; B65d *31/02*

U.S. Cl. 161—90 **9 Claims**

This invention relates to a fabric, particularly suitable for sacks, comprising:

(a) a weave of multicomponent tapes having a low-melting thermoplastic component, such as low density polyethylene, as a surface layer of the tape at one or both faces of the weave, in addition to one or more higher-melting thermoplastic components, particularly propylene, and

(b) a coating layer comprising the low-melting component adhering to the weave at one or both faces. The invention also includes a process for the preparation of the fabric.

3,705,836

FABRIC-CARRIED PLASTIC ARTICLE

James G. Francis, Hialeah, and Robert H. Pasley, Sr., Coral Gables, Fla., assignors to Royalty Designs of Florida, Hialeah, Fla.

Continuation of application Ser. No. 625,214, Mar. 22, 1967. This application June 19, 1970, Ser. No. 64,000

Int. Cl. B32b *3/00*; D06g *1/00*

U.S. Cl. 161—94 **3 Claims**

The invention relates to a novel quivery resilient plastic article locked to a fabric carrier and extending for-

ward in relief beyond one side of said fabric, said plastic comprising highly plasticized polyvinyl chloride with substantially 400 parts plasticizer to substantially 600 parts plasticizer for each 100 parts of said polyvinyl chloride.

3,705,837

WOODFLAKE COMPOSITION FOR PANELS AND METHOD OF MAKING SAME

Charles S. Breslauer, Brunswick, Ga., assignor to W. R. Grace & Co., Cambridge, Mass.

No Drawing. Filed June 16, 1970, Ser. No. 46,809
Int. Cl. B32b *5/16, 21/02;* B29j *5/04*
U.S. Cl. 161—168 11 Claims

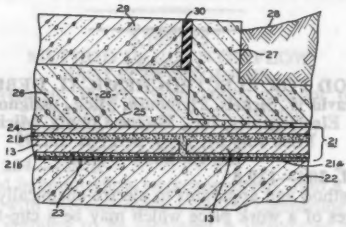
A specialized wood flake size is described which may be coated with a binder such as portland cement, cast and bonded together to form a lightweight cemented product. The woodflake size and shape provides advantages in making the cemented product. The product itself is especially attractive for use in the construction industry because of its strength and economy and the fact that it is nailable, has good thermal insulation and acoustical properties, responds well to milling and cutting and is attractive in appearance. A novel method is also described for making the product.

3,705,838

WATER-PROOFING BARRIER

Robert N. Olton, Cleveland Heights, Ohio, and Bernard C. Berney, Indianapolis, Ind., assignors to Mineral Products Corporation, Cleveland, Ohio

Original application Dec. 29, 1969, Ser. No. 888,235, now Patent No. 3,630,762. Divided and this application Apr. 2, 1971, Ser. No. 130,683
Int. Cl. B32b *9/00*
U.S. Cl. 161—206 6 Claims



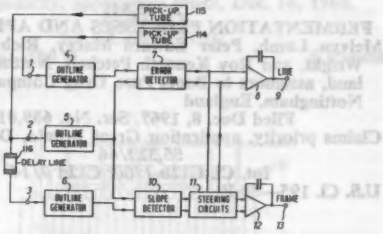
A water-proofing barrier characterized by its controlled swelling when wet and comprising in admixture a water-swellable colloidal clay, such as bentonite, and a particulate, inorganic metal salt treated with an oleaginous carboxylic acid. Preferably, the metal salt is calcium carbonate, such as amorphous chalk, treated with an acid like oleic or stearic acids. The mixture is particularly adapted as a protective layer in a below grade concrete roof system, or the like, above which a pavement, earth, walks, etc., are to be laid. The present mixture may be used alone as in layer form or in conjunction with an adjoining layer of water-swellable clay to form a multi-layer barrier. Optionally, the mixture may include a finely divided siliceous mineral such as perlite as an additional ingredient.

3,705,839

AUTOMATIC SIGNAL REGISTRATION IN COLOUR TELEVISION CAMERAS

Richard John Taylor, London, England, assignor to Electric & Musical Industries Limited, Middlesex, England

Filed Dec. 8, 1970, Ser. No. 96,075
Claims priority, application Great Britain, Dec. 16, 1969, 61,127/69
Int. Cl. H04n *9/08*
U.S. Cl. 178—5.4 M 8 Claims



A colour television camera including first and second pick-up tubes is disclosed, which camera includes automatic means for ensuring registration of the video signals derived from said tubes. The video signals derived from said tubes and relating respectively to different spectral components of a scene to be televised are passed through respective outline generator means to produce respective identification signals which are indicative of selected edges in the scene. The identification signals are applied to an error detecting circuit which is arranged to generate a correction signal dependent on the degree of misregistration between the video signals, and the correction signals are utilised, either directly or indirectly, to tend to reduce the misregistration.

3,705,840

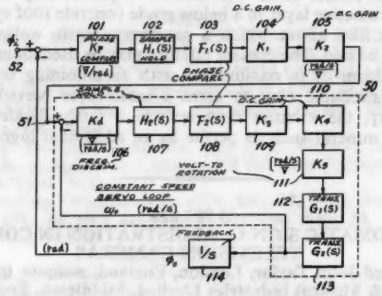
ROTATION SERVO SYSTEM WITH FREQUENCY AND PHASE ERROR CORRECTION

Tsuneo Kosugi, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa-ken, Japan

Filed Aug. 26, 1970, Ser. No. 67,118
Claims priority, application Japan, Aug. 27, 1969, 44/67,151
Int. Cl. G05d *13/62;* G11b *15/52;* H02p *7/06*
U.S. Cl. 178—6.6 P 11 Claims

A rotation servo system controls a rotation of a motor by a closed servo loop. The closed servo loop includes means for comparing the phase of a signal which is generated responsive to the rotation of the motor with the phase of a reference signal, and means for frequency discriminating. The frequency discriminating means receives

an output error signal from the phase comparing means and the rotation signal, and produces an output error signal responsive to the difference between the rotation signal and a presetting frequency.

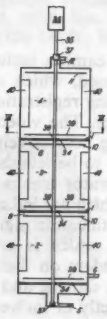


3,705,841

FERMENTATION PROCESSES AND APPARATUS

Melvyn Lumb, Peter Edward Macey, Richard Donald Wright, and Roy Kenneth Petchell, Nottingham, England, assignors to Boots Pure Drug Company Limited, Nottingham, England

Filed Dec. 8, 1967, Ser. No. 689,019
Claims priority, application Great Britain, Dec. 9, 1966, 55,329/66
Int. Cl. C12b *1/00*; C12d *9/14*
U.S. Cl. 195—80 R 11 Claims



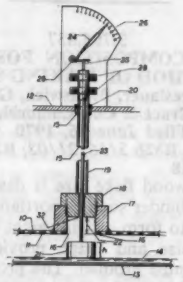
A continuous fermentation process for the cultivation of living cells which consists of the steps of continuously supplying a stream of gas and a supply of fermentable liquid to the first of a plurality of interconnected fermentation zones containing living cells capable of fermenting said fermentable liquid, said plurality of fermentation zones being interconnected through partition members defining interconnections which allow only a restricted flow of said gas therethrough, flowing said stream of gas upwards through each of said plurality of fermentation zones in the same direction as the flow of said fermentable liquid and thereafter to the bottom of the next adjacent fermentation zone, whereby products of fermentation are formed in said plurality of fermentation zones, withdrawing said stream of gas and said fermentable liquid containing said products of fermentation from the last of said plurality of fermentation zones, said restricted flow of gas between said interconnected fermentation zones forming a gas pocket in the upper part of each of said fermentation zones thus causing the liquid phase in said interconnected fermentation zones to be discontinuous from one zone to the next, said restricted flow of said gas being sufficient to transfer said fermentable liquid and products of fermentation by entrainment from the top of each of said fermentation zones to the bottom of the next adjacent fermentation zone.

3,705,842

FLOAT MEASURING DEVICE FOR MERCURY CELLS

Alexander L. Barbato, deceased, by Patricia J. Barbato, executrix, Perry, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Nov. 16, 1970, Ser. No. 89,643
Int. Cl. C01d *1/08*; C22d *1/04*
U.S. Cl. 204—99 17 Claims



Method for determining the distance between the working face of an anode and a reservoir of mercury beneath the anode in a substantially enclosed electrolytic cell has a value established for the position of the working face of the anode in the cell on an external scale means and another value established for the surface of the mercury reservoir in the cell on the external scale means. The depth of the mercury reservoir can also be determined. A measuring device in an electrolytic cell has a tube attached to a cage on an anode near an opening in the anode. The cage forms a chamber above the opening in the anode and the other end of the tube is connected with an opening in the cover of the electrolytic cell. A float is movably disposed between the chamber and the mercury reservoir. The float fits into the chamber and preferably has a height equal to the height of the chamber above the working face of the anode. The float has a rod attached which extends through the tube to give readings on a scale means located outside the electrolytic cell.

3,705,843

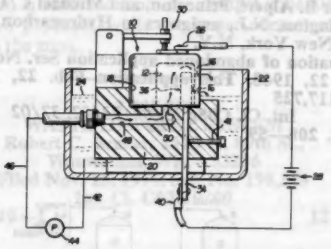
METHOD FOR ELECTROCHEMICAL DEBURRING

David W. Sickels, Plymouth, Mich., assignor to Electrogenics, Inc., Wayne County, Mich.

Filed July 27, 1970, Ser. No. 58,399
Int. Cl. B23p *1/00*
U.S. Cl. 204—129.5 6 Claims

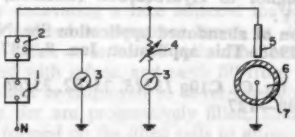
A method and apparatus to electro-chemically machine apertures of a work piece which may be a cup-like structure such as the cover of a carburetor or the like. The apertures may (1) open to the atmosphere or (2) intersect with other apertures of greater combined size or (3) have portions of increased diameter. When electrolyte under pressure is introduced between the negative electrode positioned adjacent the aperture of the work piece

and the positively charged work piece, due to the increased area beyond the aperture, the flow of the electrolyte under pressure causes turbulence or temporary eddy currents from a first laminar flow of the electrolyte through the aperture to either the unrestricted flow to the atmosphere or to a second laminar flow of the electrolyte



through the increased diameter portion of the aperture, due to the reduced pressure. The resultant turbulence efficiently scrubs the anodic film and effectively removes burrs around the edges of the exit end of the aperture with minimal stock removal along the wall of the apertures.

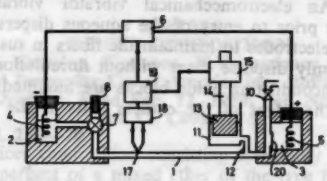
3,705,844
APPARATUS FOR THE CORONA TREATMENT OF PLASTICS
Günter Haas, Wiesbaden-Biebrich, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Filed Dec. 21, 1970, Ser. No. 100,259
Claims priority, application Germany, Dec. 22, 1969, P 19 64 068.7
Int. Cl. B01k *1/00*
U.S. Cl. 204—312 **4 Claims**



This invention relates to an apparatus for the corona treatment of shaped articles of plastic comprising a circuit including a generator for generating a voltage of appropriate frequency, a high-voltage transformer for producing a suitable operating voltage, a grounded electrode provided with a dielectric, at least one counter-electrode and an inductance coil of variable inductivity.

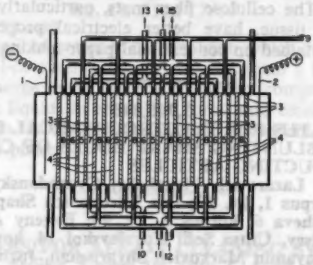
3,705,845
METHOD IN COUNTERFLOW ISOTACHOPHORESIS
Frans Everaerts, Weert, Netherlands, assignor to LKB-Produkter AB, Bromma, Sweden
Filed June 1, 1971, Ser. No. 148,657
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 R **4 Claims**

Method in counterflow isotachophoresis. Into a column provided with two electrodes a sample comprising ions of different mobility to be separated is introduced together with a first electrolyte between the sample and one of the electrodes and a second electrolyte between the sample and the other electrode. These first and second electrolytes comprise ions of higher and lower mobility respectively than the ions of said sample. A voltage is applied to the electrodes and a pressure is applied to one of said electrolytes. A boundary between zones of ions having different mobilities is detected and from this detection



a control signal is generated, said control signal controlling said pressure and/or said voltage.

3,705,846
PRODUCTION OF HYDROGEN IONS AND HYDROXYL IONS BY DECOMPOSITION OF WATER
Masaaki Kato and Sigeta Sato, Kanagawa-ken, Japan, assignors to Asahi Chemical Industry Co., Ltd., Chiyoda-ku, Tokyo, Japan
Filed Dec. 9, 1969, Ser. No. 883,530
Claims priority, application Japan, Dec. 16, 1968, 43/91,561
Int. Cl. B01d *13/02*
U.S. Cl. 204—180 P **6 Claims**

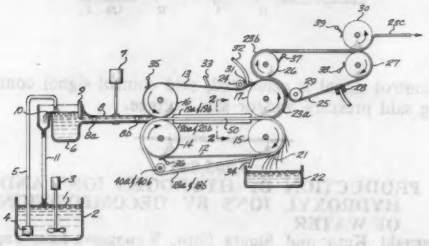


Hydrogen ions and hydroxyl ions are generated economically in an electrodialysis cell comprised of a plurality of anion exchange membranes and cation exchange membranes alternately juxtaposed between a pair of an anode and a cathode by filling aqueous solution or suspension containing at least one electrolyte which is incapable of passing through the ion exchange membrane and is selected from the group consisting of (1) water soluble polyelectrolytes (polymeric electrolytes) having positively charged fixed groups and (2) finely pulverized water insoluble solid electrolytes having positively charged fixed groups, and passing a direct electric current between the electrodes.

3,705,847
METHOD FOR FORMING A UNIFORM CONTINUOUS WEB OF PAPER
Lester W. Stiles, Longview, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Sept. 21, 1970, Ser. No. 73,779
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 **4 Claims**

A method and apparatus are disclosed for forming a continuous web of paper utilizing the principles of electrophoresis and electro-osmosis. A uniform aqueous dispersion of paper-making fibers is flowed between a pair of horizontal, spaced-apart, electrically charged endless belts

which serve as electrodes forming a deposition zone. The paper-making fibers are attracted to one electrode by electrophoresis and water to the other electrode by electro-osmosis. An electromechanical vibrator vibrates the trough just prior to entry of the aqueous dispersion between the electrodes to maintain the fibers in suspension and uniformly disperse them without flocculation. Electrically nonconducting guide blocks are mounted in contact with the edges of the endless belts in the area of



the electrostatic field to maintain the proper electrode spacing. After the electrode and fiber mat are removed from the deposition zone, the fiber mat is separated from the electrode surface by an adjacent electrically charged surface which transfers the mat. Residual water in the mat is removed simultaneously with the transfer by electro-osmosis. The cellulose fiber mats, particularly useful as capacitor tissue, have better electrical properties than can be obtained on conventional paper-making machines.

3,705,848

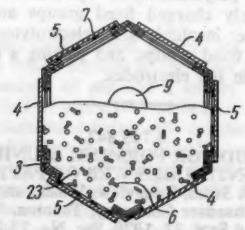
APPARATUS FOR ELECTROCHEMICAL BURRING AND BLUNTING SHARP EDGES OF CURRENT-CONDUCTING ARTICLES

Alexandr Lazarevich Vishnitsky, Grazhdansky prospekt 15, korpus 1, kv. 27; Lev Mironovich Shapiro, Ulitsa Karbysheva 6, korpus 2, kv. 95; Evgeny Andreevich Kazantsev, Ulitsa Sofii Kovalevskoi 14, korpus 2, kv. 19; Benyamin Markovich Shvartsman, Juzhnoe shosse 76, kv. 14; Georgy Petrovich Shilov, Bolshaya Pushkarskaya Ulitsa 23, kv. 28; Evgeny Fedorovich Nemilov, Grazhdansky prospekt 96, korpus 4, kv. 66; Izmail Abdulovich Baisupov, Nevsky prospekt 134, kv. 88; Vasily Fomich Masterov, Ulitsa Krasnaya 41, kv. 10; and Alexandr Stepanovich Rumyantsev, Bukharestskaya Ulitsa 94/1, kv. 287, all of Leningrad, U.S.S.R.

Filed July 22, 1970, Ser. No. 57,167

Int. Cl. C23b *5/78*

U.S. Cl. 204—213 **2 Claims**



The present invention relates to apparatus designed for electrochemical burring and blunting sharp edges on current-conducting articles.

The invention consists in an apparatus comprising a cylinder with electrolyte, in which articles to be treated are placed, and electrodes which form a closed electric circuit through the articles and electrolyte, said electric circuit having, according to the invention, at least two pairs of heteropolar electrodes.

3,705,849

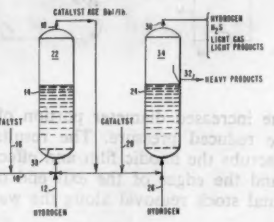
FUEL OIL DESULFURIZATION

Seymour B. Alpert, Princeton, and Michael C. Chervenak, Pennington, N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Continuation of abandoned application Ser. No. 746,419, July 22, 1968. This application Feb. 22, 1971, Ser. No. 117,725

Int. Cl. C08g *13/02, 23/02, 37/02*

U.S. Cl. 208—59 **3 Claims**



A process for desulfurization of a residuum feed material at low severities wherein the conversion of 975° F.+ materials in the feed is less than 50%, utilizing a series of ebullated catalytic bed hydrogenation reactors.

3,705,850

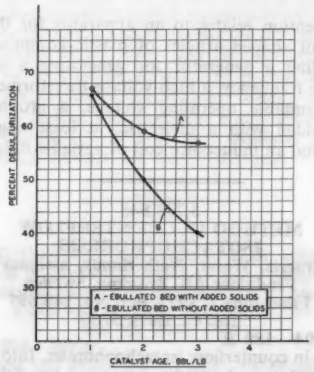
MULTIFUNCTION CONTACTING PROCESS

Ronald H. Wolk, Lawrence Township, Mercer County, N.J., assignor to Hydrocarbon Research, Inc., New York, N.Y.

Continuation of abandoned application Ser. No. 742,785, July 5, 1968. This application Jan. 8, 1971, Ser. No. 105,115

Int. Cl. C10g *13/18, 23/02, 25/06*

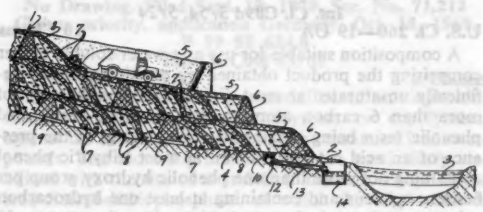
U.S. Cl. 208—127 **6 Claims**



A process for contacting liquid and gaseous reactants with two different particulate contact solids, each having a different specific physiochemical function relative to said reactants. The reactants are passed upwardly through a bed of one of the solids which is composed of particles

having sizes greater than 40 mesh, U.S., at velocities whereby the bed is expanded and designated as ebullated. The second solid is a powder, the particles of which are in a size range less than 40 mesh, U.S., and has a transport velocity equivalent to that required for 20 to 100% expansion of the larger solids which constitute the ebullated bed. The powder is introduced to the liquid feed prior to its entering the contact zone and the powder transverses through and is removed from the contact zone along with the reaction products, while the larger contact solids are retained in the zone.

3,705,851
WASTE DISPOSAL SYSTEM
Robert C. Brauer, 2123 N. 89th St., Wauwatosa, Wis. 53226
Filed Nov. 15, 1971, Ser. No. 198,549
Int. Cl. C02b *9/00*
U.S. Cl. 210—1 **12 Claims**



An above-grade waste disposal system in which refuse is utilized in combination with earth fill to provide an elevated recreational site. The ground area or base is initially graded and sloped, if necessary, toward a low zone and the graded surface is made substantially impervious to the penetration of liquid. Earth fill, preferably obtained by excavating a lake adjacent the low zone of the base, is utilized to construct berms or dikes on the base which define a series of cells. The cells are individually filled with refuse, and earth fill from the excavation of the lake is employed to cover the refuse. As the cells of one tier are progressively filled, additional tiers of cells are formed on the filled cells to ultimately form a hill or small mountain for use as a recreational facility. All leachate from the fill is collected by a drainage system at the low zone of the base for subsequent disposal.

3,705,852
STABLE SOLUTIONS OF CALCIUM SALTS
Alfred Fischer, Bronx, N.Y., assignor to Tenneco Chemicals, Inc.
No Drawing. Filed Dec. 1, 1970, Ser. No. 95,423
Int. Cl. C10m *1/24, 3/18, 5/16*
U.S. Cl. 252—1 **17 Claims**

Stable solutions of calcium salts are provided containing a first calcium salt of a branched chain aliphatic monocarboxylic acid and a second calcium salt of a branched-chain aliphatic monocarboxylic acid or of a cycloaliphatic monocarboxylic acid.

3,705,853
GREASE COMPOSITIONS
Paul Fau, Cherry Hill, and Richard J. Petrucco, Laurel Springs, N.J., assignors to Mobil Oil Corporation
No Drawing. Filed Sept. 23, 1970, Ser. No. 74,849
Int. Cl. C10m *5/20, 5/12*
U.S. Cl. 252—36 **15 Claims**

Grease compositions are provided comprising a lubricating vehicle, a grease-forming quantity of a thickening agent and a minor amount of an improving agent comprising an ethylene-vinyl ester-organic acid terpolymer.

3,705,854
DEICER COMPOSITION
Paul E. Gunning, Kenmore, N.Y., assignor to Osmose Wood Preserving Co. of America Inc., Buffalo, N.Y.
No Drawing. Filed Feb. 12, 1970, Ser. No. 11,002
Int. Cl. C09k *3/18*
U.S. Cl. 252—70 **4 Claims**

A deicer composition consisting essentially of 5 to 50 weight percent of a mixed ether of the type having only one free hydroxyl group, preferably propylene glycol methyl ether, 25 to 95 weight percent water soluble alcohol, and the remainder water. Ethylene glycol methyl ether and ethylene glycol ethyl ether each can be substituted for propylene glycol methyl ether in the same weight percent. The water soluble alcohol preferably is normal propyl or isopropyl alcohol. The deicer composition can be packaged in an aerosol spray container, in which case a suitable gaseous propellant, such as carbon dioxide or nitrous oxide, is added.

3,705,855
REVERSIBLE-EMULSION AEROSOL SYSTEM
Frank William Marschner, Whitehouse Station, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 472,014, July 14, 1965. This application July 24, 1970, Ser. No. 58,197
Int. Cl. C11d *17/04*
U.S. Cl. 252—90 **7 Claims**

A pressurized water-in-oil emulsion which reverses to a stable oil-in-water emulsion and can foam a finite time after discharge from aerosol container, comprising two immiscible liquids in emulsified form, said emulsion having water in the dispersed phase, and propellant being the continuous phase.

3,705,856
ADDITIVES FOR ALKALI CLEANING SYSTEMS
Ronald M. Sedliar, Grosse Ile, Otto T. Aepli, Southgate, and Perle N. Burkard, Wyandotte, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.
No Drawing. Filed Sept. 1, 1970, Ser. No. 68,760
Int. Cl. C11d *7/06*
U.S. Cl. 252—156 **5 Claims**

Low foaming, copper corrosion inhibiting, all temperature additives for alkali cleaning systems consists of: (a) a mixture of sequestering agents, (b) a mixture of nonionic surfactants, (c) an anionic surface active agent as a hydrotrope, and (d) water. These additives when employed in typical use solutions exhibit synergism in regard to low foam characteristics and copper corrosion inhibition.

3,705,857
COMPOSITION AND METHOD FOR STRIPPING POLYVINYL BUTYRAL PRIMED COATINGS
Gail H. Clarke, Jr., Guilford, and Henry G. Barnowski, Jr., Durham, Conn., assignors to Olin Corporation
No Drawing. Filed Jan. 25, 1971, Ser. No. 109,701
Int. Cl. C09d *9/00*; C11d *7/50*; C23g *5/02*
U.S. Cl. 252—170 **7 Claims**

A fast-acting stripping composition is employed to strip a variety of coatings, including polyurethane and polyepoxide coatings, from substrates which had been primed with polyvinyl butyral. The stripping composition comprises a mixture of a dialkyl ketone and a solvent selected from the group consisting of dimethyl formamide, tetrahydrofuran, and mixtures thereof.

3,705,858

PREPARATION OF RARE-EARTH-ACTIVATED OXYSULFIDE PHOSPHORS

George William Luckey and Charles Frederick Sherwood, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 12, 1971, Ser. No. 105,888

Int. Cl. C09k *1/14*; C22b *59/00*

U.S. Cl. 252—301.4 S 14 Claims

Novel processes for preparing inorganic rare-earth-activated phosphors and various compositions containing these phosphors are disclosed. Radiographic elements such as intensifying screens containing these phosphors, exhibit high image quality. Rare earth activated lanthanide oxysulfides can be prepared by heating and firing the first-formed sulfite precursors in fluxless, non-chalcogenating reducing atmospheres.

3,705,859

METHOD OF ABATING FOAM FORMATION IN AQUEOUS SYSTEMS

Francis J. Boylan, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 746,771, July 23, 1968, which is a continuation-in-part of application Ser. No. 667,376, Sept. 13, 1967, both now abandoned. This application Dec. 30, 1970, Ser. No. 102,954

Int. Cl. B01d *17/00*

U.S. Cl. 252—321 10 Claims

Foam formation in aqueous systems is abated by adding thereto a foam abating amount of a stable dispersion comprised of finely divided particles of a normally solid hydrophobic synthetic polymer as the dispersed phase and a liquid organic non-solvent diluent as the continuous phase.

3,705,860

ANTIFOAM AGENT

Jacque L. Duvall, San Clemente, Calif., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed Sept. 23, 1970, Ser. No. 74,925

Int. Cl. B01d *17/00*

U.S. Cl. 252—358 11 Claims

Improved antifoam agents particularly adapted for use in paper and pulp manufacturing processes are prepared from a mixture of non-polar oil, precipitated silica, metallo-organic catalyst, polymethylsiloxane and microcrystalline paraffin wax. These antifoam agents are useful also in latex paint manufacture and the like.

3,705,861

CATALYST FOR THE HYDROGENATION OF DISTILLATION RESIDUUM-CONTAINING PETROLEUM HYDROCARBONS

Yutaka Oguchi, Tokyo, and Hirotsugu Nomura, Kawasaki, Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

No Drawing. Filed June 1, 1970, Ser. No. 42,463

Claims priority, application Japan, June 3, 1969, 44/42,906

Int. Cl. B01j *11/40*, *11/44*

U.S. Cl. 252—448 9 Claims

Distillation residuum-containing petroleum hydrocarbons are hydrogenated stably by using a catalyst composed of a hydrogenatingly active metal compound, such as nitrates and ammonium salts of cobalt-molybdenum, nickel-molybdenum, nickel-cobalt-molybdenum and nickel-tungsten, supported on a carrier derived from a gelled dispersion mixture comprising a hydrosol of basic aluminum sulfate or a mixed hydrosol of basic aluminum sulfate and silica and particles of a water-insoluble inorganic solid, such as aluminum hydroxide, silica gel, or kaolinite, or its hydrogel. The excellent activity of the catalyst is maintained for a prolonged period of time.

3,705,862

WATER-SOLUBLE BINDERS PREPARED FROM PHENOLIC RESIN AND MONO-OLEFINICALLY UNSATURATED ACID

Gerhard Stieger, Wiesbaden, and Josef Flasch, Mainz-Bischofsheim, Germany, assignors to Reichhold-Albert-Chemie AG, Hamburg, Germany

No Drawing. Filed Nov. 10, 1969, Ser. No. 875,569

Claims priority, application Germany, Nov. 13, 1968, P 18 08 503.5

Int. Cl. C09d *3/54*, *5/24*

U.S. Cl. 260—19 UA 10 Claims

A composition suitable for use as a water-soluble binder comprising the product obtained by reacting a mono-olefinically unsaturated at most dicarboxylic acid having not more than 6 carbon atoms with a phenolic resin, said phenolic resin being obtained by condensing, in the presence of an acid catalyst, (1) an at most trihydric phenol containing not more than one phenolic hydroxy group per benzene nucleus and containing at least one hydrocarbon substituent the substituents having altogether up to 12 carbon atoms, (2) formaldehyde and (3) an ester of (3a) a fatty acid having from 12 to 30 carbon atoms and (3b) a polyhydric aliphatic alcohol having 2 to 14 carbon atoms, an aqueous solution for use in electrophoretic coating containing an amine or quaternary ammonium neutralization product of said reaction product and a process for preparing said reaction product.

3,705,863

MOLDING CORE GRIT

Thomas D. Hicks, 5206 Portland Ave., White Bear Lake, Minn. 55110

Filed Oct. 13, 1970, Ser. No. 80,387

Int. Cl. C08g *22/04*, *51/04*

U.S. Cl. 260—22 TN 5 Claims

A foundry mold and core are prepared using comminuted wet bottom boiler slag and a binder.

3,705,864

ELECTROPHORETIC DEPOSITION

Gerhard Stieger, Wiesbaden, and Josef Flasch, Mainz-Bischofsheim, Germany, assignors to Reichhold-Albert-Chemie AG, Hamburg, Germany

No Drawing. Filed Oct. 22, 1969, Ser. No. 868,628

Claims priority, application Germany, Oct. 23, 1968, P 18 04 555.1; Apr. 12, 1969, P 19 18 630.2

Int. Cl. C09d *3/48*, *5/24*; C23b *13/00*

U.S. Cl. 260—22 R 11 Claims

A composition suitable as a binder in electrophoretic coating comprising an ammonium or amine salt of a partial esterification product of a telogen containing low-molecular weight polymer of (A) at least one compound containing a polymerizable olefinic bond and being free from hydroxy groups and (B) at least one olefinically unsaturated carboxylic acid or functional derivative

thereof with a member selected from the group consisting of

(a)(1) at least one unsaturated long-chain monohydric alcohol,

(a)(2) at least one unsaturated fatty acid derivative selected from hydroxyalkyl esters, alkanolamides and oxazolines,

(a)(3) a combination of (a)(1) and (a)(2) and

(b) with an at least trihydric alcohol,

a process for the preparation of the esterification product and a process for electrophoretically depositing said composition.

3,705,865

THERMOSTABLE MOULDING MATERIAL BASED ON VINYL CHLORIDE OR VINYLIDENE CHLORIDE POLYMERS

Joachim Kandler and Franz-Josef Dany, Lechenich, Klaus Komorniczyk, Turnich, and Peter Munch, Hurth-Burbach, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Sept. 10, 1970, Ser. No. 71,212
Claims priority, application Germany, Oct. 18, 1969, P 19 52 624.0
Int. Cl. C08f *45/62*
U.S. Cl. 260—23 XA 2 Claims

Stabilization of moulding material based on vinyl chloride or vinylidene chloride polymers or copolymers, against the action of heat and light by means of lead compounds. The moulding material is more particularly stabilized with the use of a stabilizer mixture comprising a lead-dialkyl-dithiophosphate, of which the alkyl radicals contain between 1 and 18 carbon atoms, and one or more conventional thermostabilizers for vinyl chloride or vinylidene chloride polymers or copolymers.

3,705,866

AQUEOUS COATING COMPOSITIONS

Minoru Shibata and Makoto Yusa, Hiratsuka-shi, and Hisao Nakata and Michisuke Harada, Nigata-ken, Japan, assignors to Kansai Paint Company Limited, Amagasaki-shi, Hyogo-ken, and Nippon Soda Company Limited, Tokyo-to, Japan

No Drawing. Filed Dec. 3, 1969, Ser. No. 881,859
Claims priority, application Japan, Dec. 9, 1968, 43/90,336
Int. Cl. C09d *3/00*
U.S. Cl. 260—23.7 A 15 Claims

An aqueous coating composition contains as a binder a saponified product of a modified diene polymer which is a condensation product of a pyridine acid value of 30 to 200 of a hydroxyl terminated polymer of an aliphatic conjugated diene of 4 to 8 carbon atoms and at least one of polybasic acids or anhydrides thereof having 8 to 26 carbon atoms in the carbon-carbon skeletal chain thereof.

3,705,867

REDUCED SLUDGE FORMATION IN LARGE PARTICLE TETRAFLUOROETHYLENE POLYMER AQUEOUS DISPERSION

David Alan Holmes, Vienna, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 72,498, Sept. 15, 1970. This application Dec. 23, 1970, Ser. No. 101,105
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 F 5 Claims

Sludge formation in large particle, i.e., average particle diameter of at least 0.25 micron, tetrafluoroethylene polymer aqueous dispersion is reduced by adding ethoxylated aliphatic alcohol nonionic surfactant to the dispersion to reach a concentration of at least 7.0 percent based on the weight of the polymer solids in the dispersion. At a dispersion pH of greater than 7 and surfactant content sufficient to give the dispersion a viscosity of at least 30 centipoises, the formation of brown scum on the surface of the dispersion is eliminated.

3,705,868

ADHESIVE FOR ADHERING A POLYESTER FIBROUS MATERIAL OR AN INORGANIC MATERIAL WITH A RUBBER AND METHOD THEREOF

Toshio Honda, Eishi Kubota, Yukio Fukuura, and Yonefi Kobayashi, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,158
Claims priority, application Japan, Nov. 19, 1969, 44/92,069; Feb. 28, 1970, 45/16,868
Int. Cl. C08d *9/10*; C08g *5/10*
U.S. Cl. 260—29.7 R 6 Claims

An aqueous adhesive for adhering a polyester fibrous material or an inorganic material to a rubber consists of a mixture of a liquid adhesive base consisting mainly of a solution of a polyhydric phenol polysulfide dissolved in a resorcin excess resorcin-formaldehyde condensate and RFL solution consisting of a resorcin-formaldehyde resin and a rubber latex. The polyester fibrous material or inorganic material is adhered to the rubber by treating said material with the aqueous adhesive, drying the thus treated material at a high temperature and compressing the dried material to an unvulcanized rubber and then vulcanizing the rubber.

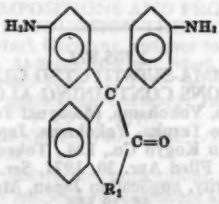
3,705,869

SOLUBLE POLYIMIDES

Franklin P. Darmory and Marianne Di Benedetto, Ardsley, N.Y., assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.

No Drawing. Filed Nov. 30, 1971, Ser. No. 203,469
Int. Cl. C08g *51/26, 51/44*
U.S. Cl. 260—30.2 R 25 Claims

Polyimides are prepared by reacting an aromatic tetracarboxylic acid dianhydride with a diamine having the formula



wherein R_1 is S, N—H, N-lower alkyl, N-aryl. These polyimides are soluble in certain organic solvents whereby they can be fabricated into films, coatings, laminates and the like. The polyimides are also fusible and moldings thus obtained are low in void content.

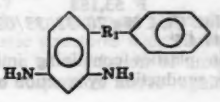
3,705,870

SOLUBLE POLYIMIDES FROM AROMATIC DIANHYDRIDES AND 2,4-DIAMINODIPHENYLAMINES AND 2,4-DIAMINODIPHENYL SULFIDES

Franklin P. Darmory and Marianne Di Benedetto, Ardsley, N.Y., assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,679
Int. Cl. C08g *51/26, 51/44*
U.S. Cl. 260—30.2 R 29 Claims

Polyimides are prepared by reacting an aromatic tetracarboxylic acid dianhydride with a diamine having the formula



wherein R_1 is S, N—H, N-lower alkyl, N-aryl. These polyimides are soluble in certain organic solvents whereby they can be fabricated into films, coatings, laminates and the like. The polyimides are also fusible and moldings thus obtained are low in void content.

3,705,871
PROCESS FOR OBTAINING POLYLACTAM POWDERS

Michel Biensan, Billere, and Philippe Bruant, Pau, France, assignors to Societe Nationale des Petroles d'Aquitaine Tour Aquitaine, Courbevoie, France

No Drawing. Filed Dec. 23, 1969, Ser. No. 887,762
Claims priority, application France, Dec. 31, 1968, 182,520
Int. Cl. C08c *11/22*
U.S. Cl. 260—33.6 R **9 Claims**

A process for the production of polylactams in pulverulent form without the formation of lumps is provided in which the catalyst and/or activator is introduced into the solution of the monomeric lactam continuously during an initial period of the polymerization until at least 20% of the lactam has been converted to polylactam.

3,705,872
PROCESS FOR THE PRODUCTION OF BONDED PARTICLES AS A MATERIAL OF CONSTRUCTION

Clifford V. Wittenwyler, Union, N.J., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 792,163, Jan. 17, 1969. This application Apr. 5, 1971, Ser. No. 131,460
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 EP **8 Claims**

Foundry cores are prepared by (1) mixing from about 90 to 99 parts by weight of foundry sand with from 1 to 10 parts by weight of a polyepoxide binder, (2) mixing said blend with a curing amount of a boron trihalide complex, especially boron trifluoride dihydrate, in an oxygenated hydrocarbon, (3) packing the blend into suitable forms and (4) allowing the polyepoxide to cure with or without heating.

3,705,873
POLY-GAMMA-SUBSTITUTED GLUTAMATE SOLUTIONS CONTAINING ALCOHOLS

Yasuo Fujimoto, Yokohama, Masayuki Teranishi, Tokyo, and Toshihiko Tezuka, Yokohama, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Filed Apr. 30, 1971, Ser. No. 139,199
Claims priority, application Japan, May 11, 1970, 45/39,355
Int. Cl. C08g *51/34, 51/30*
U.S. Cl. 260—33.4 R **18 Claims**

Poly-γ-substituted glutamate solutions comprising the polymerization product of a N-carboxy anhydride of a γ-substituted glutamate, a suitable polymerization solvent and an alcohol, characterized by high molecular weight and concentration and low viscosity; and processes for their preparation.

3,705,874
PROCESS FOR THE PRODUCTION OF POLYHYDANTOIN PLASTICS CONTAINING IMIDE GROUPS

Rudolf Merten, Leverkusen, and Wilfried Zecher, Cologne, Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of application Ser. No. 748,596, July 30, 1968. This application June 8, 1971, Ser. No. 151,135
Claims priority, application Germany, Aug. 7, 1967, F 53,158
Int. Cl. C08g *20/32, 33/02*
U.S. Cl. 260—47 CP **7 Claims**

Polyhydantoin plastics containing imide-units and a process for their production by reaction of in a first stage a polyvalent glycine ester derivative with an excess of a polyisocyanate and in a second stage the preadduct thus obtained with a polyvalent compound containing at least one cyclic carboxylic acid anhydride group.

3,705,875
THERMALLY STABLE POLYIMIDES

Charles E. Browning, New Carlisle, Ohio, assignor to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed Aug. 11, 1971, Ser. No. 170,966
Int. Cl. C08g *20/32*
U.S. Cl. 260—63 N **6 Claims**

Aromatic heterocyclic polyimides, thermally stable at high temperatures, are produced by the condensation of 2,6-diaminoanthraquinone and an aromatic tetracarboxylic dianhydride such as 1,4,5,8-naphthalenetetracarboxylic dianhydride. Because of the high thermal stability of the polyimides, they are eminently suitable for use in various aerospace applications where high temperatures are encountered. In particular, the polymers are useful for producing films, fibers, laminates, molded articles and ablative materials.

3,705,876
METHOD OF MAKING POLYOXYMETHYLENES

Herbert Amann, Grossauheim, and Erich Bäder, Hanau, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed June 25, 1970, Ser. No. 49,973
Claims priority, application Germany, June 28, 1969, P 19 32 866.6
Int. Cl. C08g *1/04, 1/20*
U.S. Cl. 260—67 FP **9 Claims**

Cyclic oligomers of formaldehyde, specifically trioxane and tetroxane, are polymerized in the presence of radical generators to reduce the polymerization temperature peak and loss by evaporation.

3,705,877
ANTISTATIC SYNTHETIC RESIN COMPOSITIONS CONTAINING TRAZINE DERIVATIVES

; Tatsuo Ishikawa, 6-3, Kitashinkoji; Shiro Hiruta, 4770, Yamatsukicho; Teruomi Wababayashi, 1, Sakurazonocho; Yoshihiko Inamoto, 3-1, Nakagawaracho-2-chome; Tetsuhiro Kusunose, 4850, Nakagawaracho-2-chome; Tatsuichi Tsumaki, 4920, Nakagawaracho-2-chome, and Masami Ota, 4993-374, Shimonagahamacho, all of Nobeokashi, Miyazakiken, Japan

Division of Ser. No. 755,875, Aug. 28, 1968. This application June 8, 1970, Ser. No. 44,283
Claims priority, application Japan, Aug. 30, 1967, 42/55188; Aug. 30, 1967, 42/55189
Int. Cl. C08g *17/14*
U.S. Cl. 260—75 N **7 Claims**

Antistatic compositions comprising polymer materials, such as polyamides, polyesters, polyolefins, polystyrenes, polyvinyl chloride, polyvinylidene chloride, polymethylmethacrylate or polyacrylonitrile butadiene styrene terpolymer and triazine derivatives as an antistatic agent.

3,705,878
DYEABLE POLYESTERS CONTAINING BRANCHED ALKYL BENZENE SULFONATES

Stanley David Lazarus, Petersburg, Va., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 869,911, Oct. 27, 1969. This application Apr. 6, 1971, Ser. No. 131,829
Int. Cl. C08g *17/14*
U.S. Cl. 260—75 S **16 Claims**

Polyesters useful for making films and filaments having incorporated therein based upon the total amount of the

dicarboxylic acid used in preparing said polyesters from about 0.006 to about 3.0 mole percent of a compound of the formula:

R—Z—Y—X

wherein:

R is a branched alkyl chain having at least 12 and not more than 30 carbon atoms,

Z is an aromatic ring selected from the group consisting of benzene, naphthalene and biphenyl,

Y is a sulfonate radical, and

X is selected from the group consisting of ammonium, sodium, zinc, calcium, chromium, potassium and magnesium

for improved dye receptivity for disperse and basic dyes.

3,705,879

URETHANE COATING COMPOSITIONS

Bernardas Brizgys, Southgate, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed Dec. 4, 1970, Ser. No. 95,395
Int. Cl. C08g *22/36*
U.S. Cl. 260—77.5 AC **5 Claims**

A single package, moisture-curable, stabilized, urethane coating composition containing unreacted isocyanate groups and capable of curing to a hard surface film at ambient temperature in about two to eight hours comprises an isocyanate-terminated prepolymer prepared by reacting (1) an organic polyol with (2) a stoichiometric excess of an organic polyisocyanate in the presence of an inert solvent and optionally in the presence of a tetravalent metallo organic salt catalyst. The resulting prepolymer is then admixed with a boron trifluoride compound, a selected amine and a tetravalent metallo-organic salt. Optionally, the boron trifluoride compound may be added to either (a) the organic polyol, (b) the organic polyisocyanate prior to the preparation of the isocyanate-terminated prepolymer, or (c) to the reaction mixture during the preparation.

3,705,880

PROCESS FOR THE PREPARATION OF ALKYLENE OXIDE COPOLYMERS

Toshiaki Matsuo, Yokohama, Koji Chono, Kawasaki, Tadahiro Go, Yokohama, and Hirotaka Komai, Kamakura, Japan, assignors to The Japanese Geon Company Ltd., Tokyo, Japan

Filed Dec. 23, 1970, Ser. No. 101,002
Claims priority, application Japan, Dec. 27, 1969, 45/104,820
Int. Cl. C08g *22/00*
U.S. Cl. 260—77.5 R **11 Claims**

A process for the preparation of alkylene oxide-isocyanate copolymers, which comprises polymerizing an alkylene oxide in the presence of at least one isocyanate compound, with the action of a catalyst formed of at least one compound containing a phosphorus-oxygen linkage and at least one compound of a metal of Group III and IV of the Periodic Table.

3,705,881

CATALYSIS OF POLYAMIDE FORMATION

Steven Edward Schonfeld, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Jan. 21, 1969, Ser. No. 792,780
Int. Cl. C08g *20/10*
U.S. Cl. 260—78 L **3 Claims**

There has been provided a method of catalyzing polyamide formation in which the catalyst is a mixture of acids of phosphorus and sulfur.

3,705,882

LIQUID THIOESTER-TERMINATED POLYMERS

Douglas E. Skillicorn, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed June 28, 1971, Ser. No. 157,601
Int. Cl. C08g *23/00*
U.S. Cl. 260—79 **12 Claims**

Liquid thioester-terminated polymers are prepared by reacting liquid mercaptan-terminated polymers with anhydrides, esters, or carboxylic acids. The polymers are readily cured to form solid elastomers, and are useful base polymers for sealants, caulks, and like formulations. These polymers do not have the typical offensive odor of mercaptan-containing polymers, and so they are especially useful in applications where the odor of mercaptan-containing polymers prohibits their use.

3,705,883

THERMALLY STABLE VINYL CHLORIDE COPOLYMERS

Frank Wingler and Karola Brudermanns, Leverkusen, and Herbert Bartl, Odenthal-Hahnenberg, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 2, 1971, Ser. No. 112,066
Claims priority, application Germany, Feb. 14, 1970, P 20 06 775.8
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.75 **3 Claims**

Thermally stable vinyl chloride copolymers are obtained by copolymerising from 65 to 98.9 parts by weight of vinyl chloride, from 3 to 210 parts by weight of at least one α-olefin and from 0.5 to 5 parts by weight of a monoallyl or diallyl ether of a polyhydric alcohol; said ether contains at least one hydroxyl group.

Polymerising occurs in bulk, emulsion or suspension at a temperature of from 0 to 60° C. and at a pressure of from 5 to 200 atms. and in the presence of a radical initiator.

3,705,884

VISCOUS COMPOSITIONS AND PROCESS FOR THE PRODUCTION THEREOF

Albert Frese, Marl, Germany, assignor to Chemische Werke Huels, Aktiengesellschaft, Marl, Germany

No Drawing. Filed June 19, 1970, Ser. No. 47,868
Claims priority, application Germany, June 20, 1969, P 19 31 421.7
Int. Cl. C08f *15/40*; C10m *1/18*
U.S. Cl. 260—80.78 **11 Claims**

Viscous atactic polyolefin compositions having viscosities which are less temperature dependent and which have relatively low viscosities at 100° C., which are useful as lubricating oils, cable filling compounds and in the manufacture of roofing board and sealing compounds, are produced from a mixture of polyolefins produced with a Ziegler catalyst and polyolefin produced with a Friedel-Crafts catalyst, preferably produced by successively polymerizing an olefin mixture comprising butene-1, first with the Ziegler catalyst and then with the Friedel-Crafts catalyst.

3,705,885

PROCESS FOR THE RECOVERY OF ESSENTIALLY PURE AMORPHOUS POLYOLEFINS

Elmer J. Hollstein, Wilmington, Del., and Lewis W. Hall, Jr., Chadds Ford, Pa., assignors to Standard Oil Company, Chicago, Ill.

Continuation-in-part of applications Ser. No. 558,495, June 17, 1966, and Ser. No. 703,831, Jan. 16, 1968. This application Dec. 2, 1969, Ser. No. 881,601
Int. Cl. C08f *15/00, 3/02, 1/94*
U.S. Cl. 260—93.7 **1 Claim**

A process for the separation of alpha-olefin polymers having different steric structures which comprises adjusting the concentration of a solution of amorphous polymer containing in suspension stereo-regular crystalline

polymer and semicrystalline stereoblock polymer to 10–40 weight percent of polymer, centrifuging and recovering a substantially pure stereoregular polymer, and a solution of amorphous polymer containing in suspension stereoblock polymer, adjusting, if necessary, the concentration of the latter solution to 5–15 weight percent polymer, filtering the solution to recover substantially pure stereoblock polymer, and a filtrate containing amorphous polymer, and recovering substantially pure amorphous polymer from the filtrate.

3,705,886

PROCESS FOR POLYMERIZATION OR COPOLYMERIZATION OF ETHYLENE

Norio Kashiwa, Otake, Tohoru Tomoshige, Iwakuni, and Toshio Kobayashi and Shiro Honma, Otake, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,251
Claims priority, application Japan, Nov. 29, 1969, 44/95,396
Int. Cl. C08f *1/56, 3/06*
U.S. Cl. 260—85.3 11 Claims

In the process for polymerizing ethylene or copolymerizing ethylene with a comonomer selected from the group consisting of 1-olefines having from 3 to 8 carbon atoms and diolefines having from 4 to 10 carbon atoms, in an inert solvent in the presence of a catalyst comprising a titanium or vanadium halogen compound bonded onto the surface of inorganic solid particles, and an organoaluminum compound or a dialkyl zinc; an improvement wherein said inorganic solid particles are particles of a synthetic double oxide of magnesium and aluminum, and said synthetic double oxide has the atomic ratio of Mg/Al in the range of from 0.02 to 100.

3,705,887

CYCLIC DECAPEPTIDES AND METHODS OF SYNTHESIZING THE SAME

Theodor Wieland, Mainz (Rhine), Wilhelm Konz, Ingelheim (Rhine), and Jurgen Faesel and Jurgen Lewalter, Frankfurt am Main, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim (Rhine), Germany

No Drawing. Filed Oct. 9, 1968, Ser. No. 766,312
Int. Cl. C07c *103/52;* C07g *7/00*
U.S. Cl. 260—112.5 1 Claim

The compounds are derivatives of antamanide, and their synthesis involves the cyclization of the corresponding acyclic decapeptide.

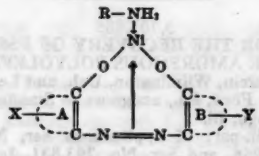
3,705,888

NON-IONIC, NICKEL n-ALKYLAMINE ARYLAZOARYL COMPOUNDS

Charles Edward Lewis, 404 William St., Somerville, N.J. 08876

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,920
Int. Cl. C09b *45/22;* D06p *3/00, 1/10*
U.S. Cl. 260—151 4 Claims

Non-ionic, heavy metal (Ni'II) amine arylazoaryl compounds of the formula:



wherein R is an n-alkyl of from 4 to 18 carbon atoms, A and B are each aryl and X and Y, individually, are H, OH, Cl, Br, NO_2, CN, SO_2-alkyl of from 1 to about 4 carbons or alkoxy of from 1 to about 4 carbons, useful in dyeing either nylon or polypropylene fibers, are provided as well as a method for dyeing therewith. A preferred compound for dyeing nylon is the nickel-n-butylamine complex of 1-(2-hydroxyphenylazo)-2-naphthol. A preferred compound for dyeing polypropylene is the nickel-n-decylamine complex of 1-(5-chloro-2-hydroxyphenylazo)-2-naphthol. The dyeings provided by the compounds on nylon and polypropylene are of high tinctorial strength, good light-fastness and uniform shade.

3,705,889

LINCOMYCIN ANALOGS AND PROCESS

Brian Bannister, Kalamazoo, and Barney J. Magerlein, Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Apr. 28, 1970, Ser. No. 32,752
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R 8 Claims

The antibiotic 7-O-(lower-alkyl)-8-norlincomycin and its S-analogs are prepared by alkylating 8-norlincomycin and its S-analogs or by acylating lower-alkyl 7-O-(lower-alkyl)-8-nor-α-thiolincosaminide. Novel intermediates include lower-alkyl N - acetyl - 8 - nor - α - thiolincosaminide; 6 - deamino - 6 - nitro - 8 - nor-α-thiolincosaminide, its peracylate and its 7-O-(lower-alkyl) derivatives; and lower-alkyl 6 - deoxy - 6-methylene - 6-nitro-1-thio-α-D-galactopyranoside peracylate.

3,705,890

CELLULOSE CARBONATES AND METHODS FOR THEIR PREPARATION

Sidney Alan Barker, John Frederick Kennedy, and Charles John Gray, Birmingham, England, assignors to Ranks Hovis McDougall Limited, London, England

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,214
Claims priority, application Great Britain, Dec. 18, 1969, 61,701/69
Int. Cl. C08b *3/04*
U.S. Cl. 260—228 9 Claims

Cellulose carbonate is prepared by reacting cellulose or a 6-substituted cellulose, e.g. methyl cellulose, hydroxyethyl cellulose, carbomethyl cellulose and diethylaminoethyl with an alkyl or aryl chloroformate.

3,705,891

METHOD FOR PRODUCING UNGELATINIZED STARCH DERIVATIVES

John V. Tuschhoff and Cleo E. Hanson, Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Continuation-in-part of application Ser. No. 696,110, Jan. 8, 1968. This application Nov. 4, 1970, Ser. No. 86,994
Int. Cl. C08b *19/06*
U.S. Cl. 260—233.3 R 4 Claims

Ungelatinized cold-water-swelling hydroxypropylated starch materials produced by reacting a dry granular starch material directly with propylene oxide in the presence of a polybasic, water-soluble salt of phosphoric acid. The starch derivatives produced by this method are useful as food additives, for cement binders, and for similar uses in which a cold-water-swelling starch derivative is useful.

3,705,892

REARRANGEMENT OF PENICILLIN

Robin D. G. Cooper, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of application Ser. No. 832,836, June 12, 1969. This application Sept. 14, 1970, Ser. No. 72,213
Int. Cl. C07d *91/14*
U.S. Cl. 260—239.1 22 Claims

Treatment of a penicillin sulfoxide with a triphenyl phosphine or trialkyl phosphite results in rearrangement

to a thiazoline azetidinone. This rearrangement product can then be converted to a cephalosporin or to a different penicillin.

3,705,893

PROCESS FOR THE 9(11)-ENOLISATION OF A STEROID 1,4-DIENE-3,11-DIONE

Derek Harold Richard Barton, London, England, assignor to Research Institute for Medicine and Chemistry Inc.

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,216
Claims priority, application Great Britain, Nov. 24, 1969, 57,425/69
Int. Cl. C07c *173/06*
U.S. Cl. 260—239.55 D 15 Claims

A process for the selective 3- or 9(11)-enolisation of a steroid 1,4-diene-3,11-dione wherein the 1,4-diene-3,11-dione is treated under substantially oxygen-free and anhydrous conditions in a non-hydroxylic solvent with an alkali metal base, other than a lithium base, which is soluble in the solvent. Where the 9(11)-enolate is desired, the dione in non-enolized form is allowed to react with the 3-enolate initially formed, and when the 3-enolate is required the reaction is either carried out below —50° C., or the reaction is carried out in such a manner that contact between the 3-enolate and unreacted dione is reduced or avoided. The resulting 3- or 9(11)-enolates can be converted to the corresponding esters, and either the enolates or the corresponding esters can be halogenated whereby a halogen is introduced at the 6- or 9-position respectively.

3,705,894

MYCOPHENOLIC ACID DERIVATIVES

Koert Gerzon and Richard E. Holmes, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of abandoned application Ser. No. 734,253, June 4, 1968. This application Sept. 24, 1970, Ser. No. 75,281
Int. Cl. C07d *5/34*
U.S. Cl. 260—240 R 6 Claims

Derivatives of mycophenolic acid having antiviral activity are described. These derivatives are obtained by modification of mycophenolic acid at the carboxyl group, the phenolic hydroxyl group, or both.

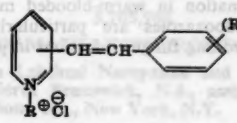
3,705,895

PROCESS FOR THE DIRECT SYNTHESIS OF STYRYLPYRIDINIUM CHLORIDES

Stephen David Levy and Richard Steven Wayne, Trenton, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Nov. 4, 1970, Ser. No. 86,779
Int. Cl. C09b *23/14*
U.S. Cl. 260—240 D 6 Claims

A novel process for the direct preparation of o- and p-styrylpyridinium chlorides of the formula:



in which R is lower alkyl of from 1 to 6 carbon atoms, R′ is selected from the group consisting of hydrogen, lower alkyl (C_1–C_4), alkoxy (C_1–C_6), nitro, lower alkylamino (C_1–C_4) and halogen, and *n* is an integer selected from 1 and 2, by reacting a dialkylpyridinium chloride in a polar solvent with a weak base or in a non-polar solvent with a strong base is disclosed.

3,705,896

PYRAZOLO[3,2-c]-s-TRIAZOLES AND PROCESS FOR THE MANUFACTURE THEREOF

Joseph Bailey, Bushey Heath, England, assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Jan. 15, 1971, Ser. No. 106,891
Claims priority, application Great Britain, Jan. 15, 1970, 1,957/70
Int. Cl. C09b *23/00*; C07d *55/06*
U.S. Cl. 260—240 E 11 Claims

A process for producing 1H-pyrazolo[3,2-c]-s-triazoles by fusing the reaction product of a thiocarbohydrazide and an alkylhalide with a keto-ester. The product has utility as a photographic coupler compound for producing magenta dyes and also as an intermediate for synthesizing various azamethine dyes, azo dyes, and cyanine-sensitizing dyes found useful in the photographic art.

3,705,897

METHOD FOR CONVERTING Δ^2 CEPHALOSPORIN TO Δ^3 CEPHALOSPORIN

Charles F. Murphy, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed July 7, 1970, Ser. No. 53,017
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 7 Claims

A 3-halomethyl Δ^2 cephalosporin is isomerized to the corresponding 3-halomethyl Δ^3 cephalosporin by oxidation of the Δ^3 compound to the sulfoxide, isomerization of the double bond from the 2- to the 3-position by treatment with a tertiary amine, and reduction of the sulfoxide to the sulfide. These 3-halomethyl Δ^3 cephalosporins are readily converted to 3-functionalizedmethyl Δ^3 cephalosporins, especially to the 3-alkylthiomethyl Δ^3 cephalosporins.

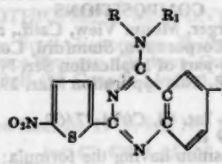
3,705,898

CERTAIN 4 - AMINO - 2-(5-NITRO-2-THIENYL) QUINAZOLINES AND THE INTERMEDIATE 4 - CHLORO-(5 - NITRO-2-THIENYL)QUINAZOLINES THEREFOR

Robert J. Alaimo, Norwich, N.Y., assignor to Morton-Norwich Products, Inc.

No Drawing. Filed Jan. 26, 1970, Ser. No. 5,924
Int. Cl. C07d *99/06*
U.S. Cl. 260—247.1 14 Claims

A series of 4-amino-2-(5-nitro-2-thienyl)quinazolines of the formula:



wherein R is hydroxy (lower) alkyl, dihydroxy (lower) or morpholinopropyl; R_1 is hydrogen, amino, or hydroxy (lower alkyl); R_2 is hydrogen or chloro; and R and R_1 taken together with —N is N-hydroxyethylpiperazino possess anthelmintic activity against *Ascaris suum* and *Syphacia obvelata* when perorally administered to in-

fected mice. The members of the series are readily prepared by reacting 4-chloro-2-(5-nitro-2-thienyl)quinazoline with the appropriate amine.

3,705,899

BENZAMIDOETHYL PIPERAZINES

Gilbert Regnier, Chatenay Malabry; Roger Canevari, Clamart, and Jacques Duhault, Chatou, all of France, assignors to Societe en nom collectif "SCIENCE UNION ET Cie"

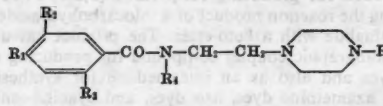
Filed May 11, 1970, Ser. No. 36,486

Claims priority, application Great Britain, May 23, 1969, 26,437/69

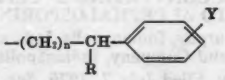
Int. Cl. C07d *57/24*

U.S. Cl. 260—256.4 N **7 Claims**

Benzamidoethyl piperazines of the formula :



wherein R_1 is lower alkoxy, amino or acylamino ; R_2 is hydrogen, halogen, lower alkyl or amino, or $R_1 + R_2$ are methylenedioxy ; R_3 is hydrogen, halogen, lower alkoxy, hydroxy or amino ; R_4 is hydrogen, lower alkyl or lower alkenyl ; R_5 is



wherein n is 0, 1, 2 or 3, R is hydrogen, phenyl or halo-phenyl and Y is hydrogen, halogen, lower alkoxy or methylenedioxy, and R_5 is also pyrimidyl, pyrazinyl, and optionally substituted 2-pyridyl, 4-pyridyl, 2-pyridyl N-oxide and 4-pyridyl N-oxide.

These compounds possess broncholytic, antianaphylactic and gastric anti-secretory properties.

3,705,900

ISOMER RESOLUTION

Charles W. Ryan, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Mar. 9, 1970, Ser. No. 17,924

Int. Cl. C07d *43/24*

U.S. Cl. 260—284 **9 Claims**

A mixture of the D and L isomers of an N-protected substituted glycine is resolved into the separate isomer fractions by first treating with cinchonine to precipitate the cinchonine salt of the L isomer followed by treatment with quinine to precipitate the quinine salt of the D isomer. The D isomer is useful in the preparation of cephalosporin antibiotics.

3,705,901

PHOTOELECTROPHORETIC IMAGING COMPOSITIONS

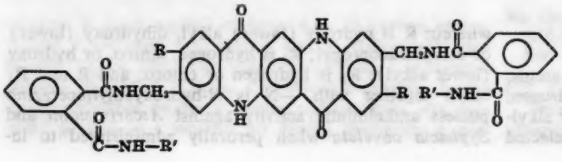
Lester Weinberger, Mount View, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of application Ser. No. 754,634, Aug. 22, 1968. This application Mar. 29, 1971, Ser. No. 129,078

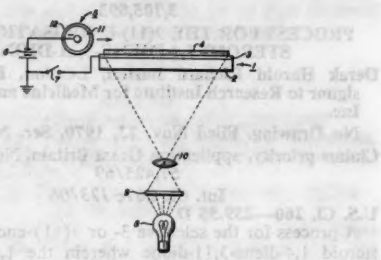
Int. Cl. C07d *37/00*

U.S. Cl. 260—279 R **2 Claims**

A novel composition having the formula:



wherein R=CH_3, C_2H_5, OCH_3, OC_2H_5 or a halogen and wherein R'=an aromatic, heterocyclic, alicyclic or



aliphatic group is disclosed. Methods of preparing said composition and of using said composition in electrophoretic imaging processes are also disclosed.

3,705,902

CERTAIN 2 - ARALKYL - 8-FLUORO-1,2,3,4-TETRAHYDRO-5-PROPIONYL-PYRIDO[3,4-b]INDOLES

David Lyon Garmaise, Montreal, and Gerard Yvon Paris, Duvernay, Canada, and Nicholas Peter Plotnikoff, Lake Bluff, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed May 3, 1971, Ser. No. 139,901

Int. Cl. C07d *31/44*

U.S. Cl. 260—295 C **3 Claims**

2 - aralkyl-8-fluoro-1,2,3,4-tetrahydro - 5 - propionylpyrido[4,3-b]indoles have been found to be powerful antidepressants when administered to warm-blooded animals.

3,705,903

2-CARBAMIDO AND THIOCARBAMIDO OXAZOLES

George Crank, Engadine, New South Wales, Australia, assignor to Lilly Industries, Ltd.

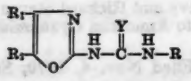
No Drawing. Continuation-in-part of abandoned application Ser. No. 53,982, July 10, 1970. This application Nov. 9, 1970, Ser. No. 88,085

Claims priority, application Great Britain, July 22, 1969, 36,859/69; Nov. 5, 1969, 54,290/69

Int. Cl. C07d *85/44*

U.S. Cl. 260—307 R **12 Claims**

2-carbamido and thiocarbamidooxazoles of the formula



where Y is O or S and R is hydrogen, alkyl or aryl and R_1 and R_2 are H, alkyl, aryl, CF_3, carbalkoxy or carboxamido; are prepared by reacting a 2-aminooxazole with an aryl or alkyl isocyanate or isothiocyanate. The carbamido and thiocarbamidooxazoles are useful in alleviating inflammation in warm-blooded mammals and the thiocarbamidooxazoles are particularly useful in method for controlling fungus infections in plants.

3,705,904

VINYL PHOSPHATES, PROCESS FOR THEIR PREPARATION AND PESTICIDAL PREPARATIONS CONTAINING THEM

Henry Martin and Josef Drabek, Basel, Switzerland, assignors to Ciba-Geigy AG

No Drawing. Filed May 18, 1970, Ser. No. 38,570

Claims priority, application Switzerland, May 19, 1969, 7,679/69; July 22, 1969, 11,193/69

Int. Cl. C07d 27/08

U.S. Cl. 260—326.5 A 2 Claims

The present invention relates to new, broad-spectrum phosphates, their process for the manufacture and their use, either per se or in preparations in the control of nematodes, insects and pests belonging to the order of acarina at all stages of development. These compounds are also effective against undesired plant growth, bacteria and fungi, and also against gastropods. They also have a chemosterilizing action on insects.

3,705,905

6,7-DIHYDRO-5H-PYRROLIZINES AND METHOD OF PREPARATION

Claude Charles Joseph Culvenor, Mitcham, Victoria, John Alexander Edgar, Blackburn, Victoria, Leslie Walter Smith, Mitcham, Victoria, Helen Joan Tweeddale, East Kew, Victoria, Marjorie Vivienne Jago, Blackburn, Victoria, and Eric Lancelot French, Mount Eliza, Victoria, Australia, assignors to Commonwealth Scientific and Industrial Research Organisation, East Melbourne, Victoria, Australia

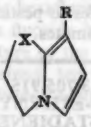
No Drawing. Filed Aug. 8, 1969, Ser. No. 848,711

Claims priority, application Australia, Aug. 8, 1968, 41,864/68

Int. Cl. C07d 27/28

U.S. Cl. 260—326.5 R 8 Claims

The invention provides new compounds having antiviral, anti-tumour or immunosuppressive activity having the general formula



wherein X represents a methylene, α-hydroxymethylene, β-hydroxymethylene or carbonyl group and R represents a hydroxymethyl or formyl group. It also provides a method for the preparation of these compounds from heliotridine, retronecine or supinidine by oxidation followed, if desired, by reduction.

3,705,906

ADAMANTANOPYRROLIDINES

Venkatachala Lakshmi Narayanan and Joseph Edward Dolfini, North Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed July 24, 1968, Ser. No. 747,097

Int. Cl. C07d 27/30

U.S. Cl. 260—326.11 4 Claims

Novel N-substituted adamantano[2,1-b]-pyrrolidines and salts thereof which are useful as antiviral agents.

3,705,907

4-(2-HYDROXY)-3-AMINOPROPOXY)-INDOLE DERIVATIVES

Franz Troxler, Bottmingen, Switzerland, assignor to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

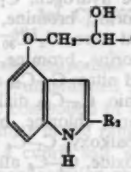
No Drawing. Continuation-in-part of application Ser. No. 860,397, Sept. 23, 1969. This application June 15, 1970, Ser. No. 46,478

Claims priority, application Switzerland, Feb. 19, 1970, 2,400/70

Int. Cl. C07d 27/56

U.S. Cl. 260—326.14 R 18 Claims

The invention concerns novel compounds of formula:



in which R_1 is lower alkyl, cycloalkyl having 3 to 4 carbon atoms, phenylalkyl of 8 to 10 carbon atoms or 1-adamantyl, and R_2 is hydroxymethyl or $COOR_5$, where R_5 is a hydrogen atom or lower alkyl radical, which are useful as β-adrenergic blocking agents. Processes for the production of the compounds of the invention and intermediates for the use therein are described.

3,705,908

PROCESS FOR PREPARING 2-FORMYL-2-LOWER ALKYL 1,3-DITHIOLANES AND 1,3-DITHIANES

Charles M. Leir, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed June 28, 1971, Ser. No. 157,719

Int. Cl. C07d 71/00, 73/00

U.S. Cl. 260—327 M 3 Claims

Process for the preparation of a dithiolane or dithiane compound substituted at the 2 carbon atom by both an aldehyde group and a lower alkyl group, which comprises converting an alkylene dithiol or alkylene dithiol di- or monoacetate to an alkylene disulfenyl halide then reacting the halide with an aldehyde of 3 to 6 carbon atoms in a suitable solvent.

3,705,909

DIBENZOTHIOPHENE SULFONYL HALIDES

William Bruce Scott, Vancouver, British Columbia, and Peter Laurence Simpson, Clarkson, Ontario, Canada, assignors to Gulf Oil Canada Limited, Toronto, Ontario, Canada

Filed Dec. 24, 1970, Ser. No. 101,350

Int. Cl. C07d 63/24

U.S. Cl. 260—329.3 11 Claims

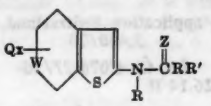
This invention relates to new dibenzothiophene sulfonyl halides, their preparation, and novel polymers derived therefrom. The thermosplastic thermally stable polymers so formed are aromatic polysulfones, aromatic polysulfonamides, and aromatic polysulfonates useful as thermal insulating coatings for electrical wiring and circuitry.

3,705,910
N-(2-[4,5,6,7-TETRAHYDROBENZOTHIENYL])-PROPIONAMIDES

Charles A. Lundberg, Jr., Colonia, and John E. Engelhart, Westfield, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed May 20, 1970, Ser. No. 39,153
Int. Cl. C07d *63/18, 65/08*
U.S. Cl. 260—332.2 R 4 Claims

Compounds having the following structural formula:



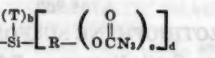
wherein W is CH_2 or CH—Q or a heteroatom selected from the group consisting of O,S(O)*n*, (where *n* equals 0–2) and N—R; Q can be hydrogen, C_1–C_{15} alkyl optionally substituted by chlorine, bromine, cyano, C_1–C_4 alkoxy, C_1–C_4 alkylthio and nitro; C_3–C_{30} cycloalkyl optionally substituted by chlorine, bromine, cyano, C_1–C_4 alkoxy, C_1–C_4 alkylthio and nitro; C_1–C_{20} alkoxy, C_3–C_{30} cycloalkoxy, C_1–C_{20} alkylthio, C_2–C_{20} dialkylamino, C_6–C_{30} dicycloalkylamino, cyano, chlorine, bromine, C_2–C_5 alkyl carboxy, C_1–C_5 carboalkoxy, C_1–C_4 perfluoroalkyl, thiocyano, C_1–C_6 alkylsulfoxide, C_1–C_6 alkylsulfone, C_6–C_{10} aryl and C_5–C_{20} heterocyclic; X ranges from 0–6 when Q is a C_1–C_{15} optionally substituted alkyl group but for all other values of Q, X is no greater than 2; R is selected from the group consisting of hydrogen, C_1–C_{16} alkyl, C_3–C_{10} cycloalkyl, C_1–C_{10} alkoxy, C_3–C_{12} cycloalkoxy and C_1–C_{10} alkylthio. Each of the above enumerated R groups may be optionally substituted by chlorine, bromine, cyano, C_1–C_4 alkoxy, C_1–C_4 alkylthio and nitro; R′ is selected from the group consisting of; hydrogen, C_1–C_{15} alkyl optionally substituted by C_1–C_4 alkylthio, chloro, bromo, cyano, C_1–C_4 alkoxy and nitro, C_3–C_{10} cycloalkyl optionally substituted by C_1–C_4 alkyl, chloro, bromo and C_1–C_4 alkylthio, C_6–C_{10} aryl, C_6–C_{10} aryloxy, C_6–C_{10} arylthio, C_6–C_{10} arylamino, C_{12}–C_{20} diarylamino, hydrazino, C_1–C_6 monoalkyl hydrazino, C_2–C_{12} dialkylhydrazino, and C_3–C_{12} trialkylhydrazino, C_1–C_{10} alkylamino, C_2–C_{20} dialkylamino, C_2–C_8 alkoxyalkylamino; Z is either O or S. These compounds have been found to possess post emergent herbicidal activity.

3,705,911
SILYL-AZIDOFORMATES

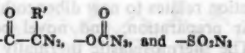
J. Brent Thomson, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Application Sept. 30, 1969, Ser. No. 862,531, which is a continuation-in-part of application Ser. No. 789,974, Dec. 31, 1968. Divided and this application Nov. 16, 1971, Ser. No. 199,300
Int. Cl. C07c *117/00;* C07d *109/00*
U.S. Cl. 260—349 2 Claims

Disclosed are nitrogen containing silane compounds of the formula



where R is an organic radical, X is selected from halo, hydroxy, alkoxy, aryloxy, organo oxycarbonyl, azido, amine, and amide radicals; T is selected from alkyl, cycloalkyl, aryl, alkaryl, and aralkyl radicals; *a* is an integer from 1 to 3; *b* is an integer from 0 to 2; *c* is an integer from 1 to 10; *d* is an integer from 1 to 3; and $a+b+d$ equals 4;



where R′ is selected from hydrogen, alkyl, cycloalkyl, aryl and —COOR″ radicals; where R″ is selected from alkyl, cycloalkyl, and aryl radicals.

3,705,912
PREPARATION OF ALCOHOLS

Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Mar. 22, 1971, Ser. No. 127,030
Int. Cl. C07c *169/54*
U.S. Cl. 260—397.2 9 Claims

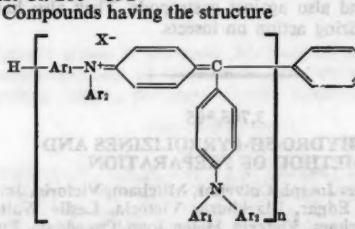
Alcohols may be prepared by the hydration of olefinic compounds utilizing a catalyst comprising a hexavalent molybdenum compound.

3,705,913
ELECTROPHOTOGRAPHIC SENSITIZERS

Charles J. Fox and Arthur L. Johnson, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Mar. 18, 1968, Ser. No. 714,091, now Patent No. 3,589,897. Divided and this application Nov. 27, 1970, Ser. No. 93,509
Int. Cl. C07c *87/50, 87/64*
U.S. Cl. 260—391 20 Claims

Compounds having the structure



are sensitizers for photoconductors in electrophotographic elements.

3,705,914
PESTICIDAL CARBAMATE DERIVATIVES OF NAPHTHAQUINONES

Cynthia Joan Pickles, Reading, and Nigel Douglas Bishop, Wokingham, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 8, 1970, Ser. No. 44,643
Claims priority, application Great Britain, June 25, 1969, 32,069/69
Int. Cl. C07c *125/04, 125/06*
U.S. Cl. 260—396 R 2 Claims

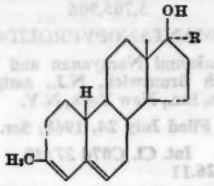
This invention relates to naphthaquinonyl and anthraquinonyl carbamates and processes for preparing them. The invention also relates to pesticidal compositions containing the above carbamates.

3,705,915
3-METHYL-17α-ETHYNYL-19-NOR-3,5-ANDROSTADIENE-17β-OL

Klaus Irmscher and Klaus Bruckner, Darmstadt, Germany, assignors to E. Merck A.G., Darmstadt, Germany

No Drawing. Continuation of abandoned application Ser. No. 744,683, July 15, 1968. This application Nov. 24, 1970, Ser. No. 92,175
Claims priority, application Germany, July 15, 1967, M 74,767
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.5 1 Claim

The following compounds function as ovulation-inhibitors in rats but exhibit substantially no progestational activity in the Clauberg test on rabbits:



wherein

R represents allyl or ethynyl.

3,705,916

TETRA(BICYCLOHEPTYL) TRANSITION METAL COMPOUNDS

Barton K. Bower, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Feb. 2, 1971, Ser. No. 112,024

Int. Cl. C07f 7/00

U.S. Cl. 260—429.3 3 Claims

Tetravalent organometallic compounds of transition metals are described wherein the metal is attached to the bridge-head carbon of four bicyclic radicals, namely, a 1-bicyclo-[2·2·1]-heptyl radical that contains not more than one methyl group on a carbon adjacent to the bridge-head carbon. Typical compounds are tetrakis(1-norbornyl)titanium and the corresponding zirconium, hafnium, vanadium, chromium, manganese, iron and cobalt compounds. These organometallic compounds have many uses including their use as catalysts for the polymerization of vinyl monomers.

3,705,917

PROCESS FOR PREPARING FLUOROPERHALOALKYL ISOCYANATES

Cyril Woolf, Morristown, Bryce C. Oxenrider, Florham Park, and Wilhelmus M. Beyleveld, Whippany, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Feb. 26, 1970, Ser. No. 14,652

Int. Cl. C07c 119/04

U.S. Cl. 260—453 P 24 Claims

Fluoroperhaloalkyl isocyanates and fluoroperhaloazaolefins are prepared by reacting a fluoroperhalogenated carbonyl compound with a cyanogen halide and an ionizable fluoride salt in the presence of an aprotic, polar liquid reaction medium. For example, $(CF_3)_2CFNO$ and

$$(CF_3)_2CFN{=}C(CF_3)_2$$

are prepared by reacting hexafluoroacetone with cyanogen chloride and potassium fluoride in the presence of acetonitrile. A separate mixture of the isocyanate and the azaolefin is normally obtained, but the reaction conditions can be controlled to favor formation of either product.

3,705,918

POLYSUBSTITUTED DIHYDROPYRENES

Luther A. R. Hall, Woodcliff Lake, N.J.; John A. Gurney, Tarrytown, N.Y., and Harris B. Renfroe, Montvale, N.J., assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Division of Ser. No. 635,287, April 7, 1967, Pat. No. 3,557,218, which is a continuation-in-part of Ser. No. 499,064, Oct. 20, 1965, abandoned. This application Oct. 16, 1970, Ser. No. 81,580

Int. Cl. C07c 121/48

U.S. Cl. 260—464 1 Claim

Photochromic 1,3,6,8-tetra(lower)alkyl-15,16-dimethyl-15,16-dihydropyrenes, 15,16-methylene-15,16-dihydropyrenes, 15,16-methylene-15,16-dihydropyrenes and 1,3,6,8-tetra(lower)alkyl-15,16-methylene-15,16-dihydropyrenes substituted in one or both of the 2- and 7-positions benzoyl, alkanoyl, alkanoyloxy, cyano, nitro, alkyl, α-hydroxyalkyl, α-acyloxyalkyl, α-isonitrosoalkyl, or acylamido groups are prepared via substitution of the parent hydrocarbon. A typical embodiment is 2-acetamido-7-nitro-1,3,6,8,15,16-hexamethyl-15,16-dihydropyrene.

3,705,919

REACTIONS OF ORGANO-METALLIC COMPOUNDS OF PLATINUM AND PALLADIUM GROUP VIII METALS WITH ETHYLENICALLY UNSATURATED COMPOUNDS

Richard F. Heck, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation of application Ser. No. 659,899, Aug. 11, 1967, now abandoned, which is a continuation-in-part of applications Ser. No. 479,665, now Patent No. 3,527,794, Ser. No. 479,649, now Patent No. 3,413,352, and Ser. No. 479,605, now abandoned, all Aug. 13, 1965, and application Ser. No. 520,677, now abandoned, Jan. 14, 1966, which in turn is a continuation-in-part of said application Ser. No. 479,665. This application Feb. 8, 1971, Ser. No. 113,706

Int. Cl. C07c 67/00

U.S. Cl. 260—491 6 Claims

Useful organic compounds are produced by contacting an ethylenically unsaturated organic compound with an organometallic compound of a Group VIII metal having an atomic number in the range of 44–78 in the presence or absence of a cupric salt, and the organic compounds produced are condensation products of the organo group with the unsaturated organic compound.

3,705,920

SULFONYLPHENYLPHOSPHONIC ACIDS

Arthur A. Patchett, Cranford, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Dec. 10, 1969, Ser. No. 883,992

Int. Cl. A61k 27/00; C07f 9/38

U.S. Cl. 260—502.5 8 Claims

Sulfonylphenylphosphonic acids and salts, esters and amides thereof wherein the benzene ring may be substituted by halo, alkyl, trihalomethyl, nitro, carboxy or a hydrocarbylene moiety. The products are prepared by treating a sulfonylbenzene diazonium salt with a cuprous halide and a phosphorous trihalide followed by hydrolysis of the resulting intermediate. The products are uricosuric agents useful in the treatment of gout and gouty arthritis.

3,705,921

METHOD OF PREPARING β-METHYL ADIPIC ACID

Jorg Strickrodt, Laatzen; Gotthard Engemann, Salzgitter-Bad, and Hans-Gerd Eulenhofer, Salzgitter-Lebenstedt, all of Germany, assignors to Veba-Chemie Nord GmbH, Gelsenkirchen-Buer, Germany

Filed March 13, 1970, Ser. No. 19,494

Claims priority, application Germany, April 26, 1970, P 19 21 441.6

Int. Cl. C07c 55/04

U.S. Cl. 260—531 R 5 Claims

In the process of producing β-methyl adipic acid from a mixture of para and meta methylcyclohexanol by oxidation with nitric acid for a time and at a temperature sufficient for production of the β-methyl adipic acid, and cooling of the reaction product for precipitation of the β-methyl adipic acid and formation of a mother liquor, the improvement which comprises utilizing in the reaction as the source of para and meta methylcyclohexanol a hydrogenated crude cresol mixture which contains as well as para and meta methylcyclohexanol, up to 20 percent of ortho methylcyclohexanol or cyclohexanol or ortho methylcyclohexanol and cyclohexanol.

3,705,922

PROCESS FOR THE PREPARATION OF GLYOXYLIC ACID METHYL HEMIACETAL

Robert H. Callighan, Penn Hills Township, Allegheny County, and Philip X. Masciantonio, Penn Township, Westmoreland County, Pa., assignors to United States Steel Corporation

No Drawing. Filed Aug. 11, 1970, Ser. No. 63,006
Int. Cl. C07c *59/22*
U.S. Cl. 260—535 R 8 Claims

This invention relates to an improved process for obtaining essentially quantitative yields of glyoxylic acid methyl hemiacetal by ozonolysis of maleic acid in methanol, followed by catalytic hydrogenation of the ozonolysis products. The hemiacetal may then be readily hydrolyzed to produce glyoxylic acid monohydrate.

3,705,923

METHOD FOR PREPARATION OF ORGANIC POLYSULFIDES

Alfred Bay Sullivan, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,893
Int. Cl. C07c *149/32*
U.S. Cl. 260—608 16 Claims

A process for the preparation of organic polysulfides which comprises reacting a compound containing one or more —SH radicals with a sulfenamide characterized by the presence of a carbonyl group adjacent to the sulfenamide nitrogen.

3,705,924

VAPOR PHASE PROCESS FOR PRODUCING VINYL ALLYL ETHER

Robert A. Smith, Anaheim, and Ting-I Wang, Fullerton, Calif., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed July 15, 1969, Ser. No. 841,735
Int. Cl. C07c *43/00, 43/16*
U.S. Cl. 260—614 R 1 Claim

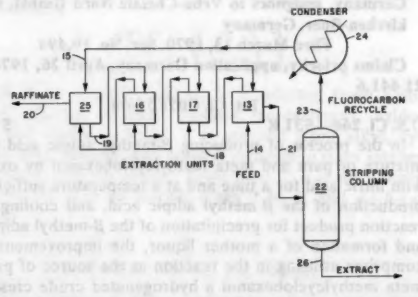
Vinyl allyl ether is produced by the vapor phase catalytic conversion of diallyl acetal to allyl vinyl ether using selected catalysts including silica gel, molecular sieves, aluminum phosphate, charcoal, alumina, and disodium phosphate. Certain catalysts including glass beads, Alundum, H_2SO_4 on silica gel and NaOH on silica gel do not produce the allyl vinyl ether in the process disclosed.

3,705,925

METHOD FOR SEPARATION OF FATTY ALCOHOLS FROM HYDROCARBONS

Charles M. Starks and Gifford G. McClaflin, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Mar. 19, 1969, Ser. No. 808,486
Int. Cl. C07c *29/24, 7/00*
U.S. Cl. 260—643 D 5 Claims



Fluorocarbons are disclosed as selective solvents for separating alcohols from hydrocarbons.

3,705,926

MANUFACTURE OF LONG CHAIN ALPHA-OLEFINES FROM MIXTURES OF HEAVY PARAFFINS

Paul Rumpf, 23 rue Gazan, Paris, and Byouk Blouri, 70 Avenue des Vergers, Bourg la Reine, both of France

Filed Feb. 20, 1970, Ser. No. 13,049
Int. Cl. C07c *11/12*
U.S. Cl. 260—683 R 4 Claims

The invention relates to a process for preparing long-chain α-olefins from mixtures of heavy paraffins.

The starting mixture is liquified, it is preheated with an inert carrier gas such as nitrogen, to a temperature of about 400° to 500° C, in its partially vaporized and partially pulverized state it is then passed into the gas stream, first in a zone heated to between about 600° and 800° C, then for a longer time in at least one lower temperature zone advantageously in the range of 400° to 500° C and finally the products of the reaction or reactions are recovered for subsequent use or conversion.

Paraffinic products which were unusable in practice can thus be vaporized.

3,705,927

ALKYL- OR ARYL-THIOLPHOSPHONIC ACID O-ALKYL-S-(N,N-DI-SUBSTITUTED AMINO CARBAMYL)-M ETHYL ESTERS

Claus Stolzer, Wuppertal-Elberfeld; Igeborg Hammann, and Gunther Unterstenhofer, both of Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed April 20, 1970, Ser. No. 30,311
Claims priority, application Germany, April 23, 1970, P 19 20 504.0
Int. Cl. C07f *9/40*; A01n *9/36*
U.S. Cl. 260—923 8 Claims

Alkyl- or aryl-thiolphosphonic acid O-alkyl-S-(N,N-di-substituted amino carbamyl)-methyl esters, which possess arthropodicidal, especially acaricidal and insecticidal, properties, and which may be produced by conventional methods.

3,705,928

O-ALKYL-N-MONOALKYLAMIDO-(THIONO)THIOLPHOSPHORIC ACID S-(N',N'-DIALKYLAMINO-CARBAMYL)-METHYL ESTERS

Claus Stolzer, Wuppertal-Elberfeld; Ingeborg Hammann, Koeln, and Gunter Unterstenhofer, Opladen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed April 20, 1970, Ser. No. 30,357
Claims priority, application Germany, April 23, 1969, P 19 20 503.9
Int. Cl. C07f *9/24*; A01n *9/36*
U.S. Cl. 260—923 11 Claims

O-alkyl-N-monoalkylamido-(thiono)thiolphosphoric acid S-(N', N'-dialkylaminocarbamyl)-methyl esters, which may be substituted on the methyl ester group and which possess arthropodicidal, especially acaricidal and insecticidal, properties, and a process for their production.

3,705,929

N-ISOPROPYL-PHOSPHORO-AMIDO-THIOATES

Gerhard Schrader, Wuppertal-Cronenberg, Ludwig Eue, Cologne-Stammheim, and Helmuth Hack, Cologne-Buchheim, Germany, and Seiichi Hirane, Masahiro Aya, Shigeo Kishino, and Nobuo Fukazawa, Tokyo, Japan, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 20, 1969, Ser. No. 867,875
Claims priority, application Japan, Oct. 28, 1968, 43/78,424
Int. Cl. A01n *9/36*; C07f *9/24, 9/26*
U.S. Cl. 260—951 10 Claims

N-isopropyl-phosphoro - amido - thioates, i.e. O - (2-nitro - 4 - alkoxy - phenyl) - O - alkyl-N-isopropyl-phosphoro-amido-thioates or O - (2 - nitro - 4-alkoxy-phenyl)-

O - alkyl - N - isopropyl - amido-thionophosphates, which possess herbicidal properties and which may be produced by conventional methods.

3,705,930

TRITHIOLPHOSPHORIC ACID ESTERS

Hanshelmut Schlor and Hellmut Hoffmann, Wuppertal-Elberfeld, Erik Regel, Wuppertal-Cronenberg, and Hans Scheinpflug, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 22, 1970, Ser. No. 30,965
Claims priority, application Germany, May 6, 1969, P 19 22 928.8
Int. Cl. A01n *9/36*; C07f *9/16*
U.S. Cl. 260—964 8 Claims

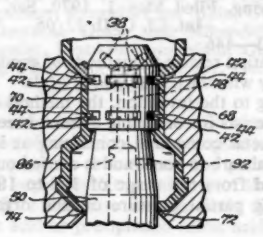
S-monoalkyl-S,S-diphenyl- or S,S-dialkyl-S-phenyl-trithiolphosphoric acid esters in which each alkyl group has from 1 to 4 carbon atoms, e.g., S-methyl (or -ethyl, -propyl, -butyl)-S,S-diphenyltrithiolphosphoric acid ester, S,S-dimethyl (or -diethyl, -di-propyl, di-butyl-)phenyltrithiolphosphoric acid ester, have exceptional fungicidal activity, especially against rice pathogens, and further exhibit insecticidal and acaricidal effectiveness.

3,705,931

METHOD FOR BLOW MOLDING AND COMPRESSION MOLDING THERMOPLASTIC MATERIAL

Raymond C. Confer, Gasport, N.Y., and Floyd H. Talmon, Fairview Park, Ohio, assignors to Air-Lock Plastic, Inc., Tonawanda, N.Y.

Filed Mar. 23, 1970, Ser. No. 21,945
Int. Cl. B29c *17/07*; B29d *3/00*
U.S. Cl. 264—89 5 Claims



A method of blow molding an article having an insert permanently affixed thereto. The insert is placed on a mounting fixture between complementary mold sections. An extruded parison is fed around the insert and the mold sections are closed about the parison for enclosing a portion of the same. Opposed lands on the mold sections compress a portion of the enclosed parison against the insert and separate the enclosed parison into two hollow sections. Air is introduced into the two hollow sections to expand the same into conformity with the cavity defined by the mold sections.

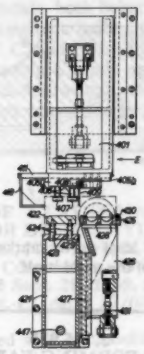
3,705,932

METHOD FOR THE MANUFACTURE OF HOLLOW PLASTIC ARTICLES

Norman Ashcroft Hurst, 8 Russell Bank Road, Four Oaks; Thomas Edward Horace Gray, 54 Mayfair Road, Wylde Green, and James Jones-Hinton, 11 The Bell Field, Tanworth-in-Arden, all of England

Continuation-in-part of Ser. Nos. 601,591, Dec. 14, 1966, abandoned, and Ser. No. 601,592, Dec. 14, 1966, abandoned.
This application May 12, 1970, Ser. No. 36,507
Int. Cl. B29c *17/04*, *17/08*, *17/14*; B32b *1/10*
U.S. Cl. 264—89 7 Claims

A method for manufacturing table tennis balls. The halves of a ball are formed in a single sheet and the sheet is separated to separate the formed halves of the ball. One of the portions of the sheet containing a ball half is inverted relative to the other and the portions are aligned so as to align the ball halves



the rein. The sheet portions are then welded together to join the ball halves and the completed ball is removed from the joined sheet portions.

3,705,933

AGGLOMERATION OF PHOSPHOR MATERIALS PRIOR TO CALCINATION TO ELIMINATE CALCINING IN RECEPTACLES

William C. Perry, Jennings, and Eugene F. Puttock and Ronald S. Schreiber, St. Louis, Mo., assignors to Mallinckrodt Chemical Works, St. Louis, Mo.

Continuation-in-part of application Ser. No. 15,922, Mar. 2, 1970. This application Mar. 26, 1971, Ser. No. 128,443
Int. Cl. C09k *1/36*; B01j *2/00*
U.S. Cl. 264—117 13 Claims

Thermally refined phosphor material, such as alkaline earth haloapatite phosphor material, in the form of finely divided particles may be produced on a continuous basis in a furnace, without sticking of phosphor material to the furnace walls and without significant loss by volatilization of activator elements, by initially forming particles of precursor phosphor material capable of producing the desired phosphor material into coherent but still friable bodies. The compacted bodies are then continuously fed to a furnace, such as an inclined tubular furnace, where they are heated to incandescence to form and/or thermally refine the phosphor material. The compacted, thermally refined bodies of activated phosphors emanating from the furnace are easily crushed or rolled to yield activated phosphor granules in their original particulate form ready for use in fluorescent lamp coatings and the like.

3,705,934

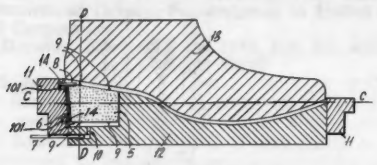
METHOD FOR THE COVERING OF MOLDABLE ARTICLES (IN PARTICULAR, THE HEELS AND SOLES OF SHOES) AND MOLD FOR APPLICATION OF SAID METHOD

Michele Giannini, Via Imbriani, 81, Barletta, Italy

Filed July 14, 1969, Ser. No. 841,536
Claims priority, application Italy, July 12, 1968, 916/68; Feb. 17, 1969, 905/69; June 16, 1969, 914/69
Int. Cl. A43d *65/00*
U.S. Cl. 264—219 3 Claims

A method for the partial or total covering of any moldable article (particularly suitable for the heel and soles of shoes), characterized by the fact that the said covering is carried out during the molding, by placing the covering, which has previously been cut out or sliced off in the desired shape, against

the surface of the mold, in areas corresponding to those of the molded piece that have to be covered, the limits of the said areas having been at least partly marked by protruding parts located on the walls of the mold itself.



3,705,935

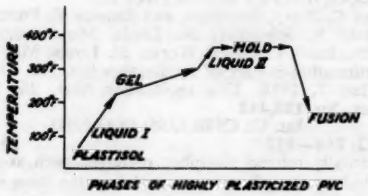
PROCESS FOR FORMING FABRIC-CARRIED PLASTIC ARTICLE

James G. Francis, Hialeah, and Robert H. Pasley, Sr., Coral Gables, Fla., assignors to Royalty Designs of Florida, Hialeah, Fla.

Original application Mar. 22, 1967, Ser. No. 625,214. Divided and this application Feb. 6, 1970, Ser. No. 13,216

Int. Cl. B29h *9/02*

U.S. Cl. 264—257 7 Claims



A fabric-carried solid resilient quivery mass of plastic is made by molding a polyvinyl chloride plastisol against a fabric. The plastisol comprises at least substantially 400 parts of plasticizer for each 100 parts of resin and is heated to about 340 degrees F. through a gel state to a liquid state before molding.

3,705,936

MOVING TARGET PLATFORM DIGITAL VIDEO MAPPER

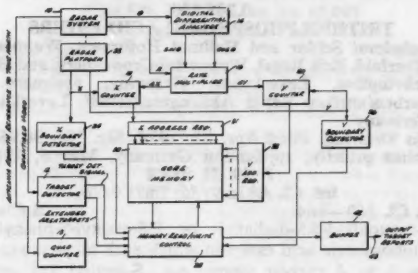
Richard D. Wilmot, Brea, and Jack R. Ballantyne, Santa Ana, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 18, 1970, Ser. No. 38,463

Int. Cl. G01s *9/42*

U.S. Cl. 343—7.7 6 Claims

The apparatus of the present invention provides a digital video mapper for use on a moving radar platform. Contemporary video mappers will not function properly if the radar platform is moving, because under these circumstances a stationary return will, in general, have a different range and bearing measurement at every scan. With the range and azimuth of stationary targets changing as the radar platform moves, it is no longer possible to address the memory with the radar's range and azimuth counters, since a stationary return will not normally fall into the same memory cell when the memory is synchronized to the radar in this manner. In accordance with the present invention, a digital video mapper is provided wherein the digital mapper memory is automatically controlled with respect to a fixed reference, rather than to the moving radar. In addition, account is taken of new areas which continually enter the radar's coverage while other areas are being left behind.



3,705,937

PRODUCING DIAMONDS SYNTHETICALLY

Boris Eduardovich Dzevitsky, Tsentralny proezd 9, kv. 8, Krasnogorsk Moskovskoi Oblasti, U.S.S.R.; and Boris Vladimirovich Spitsyn, ulitsa Vavilova 37a, kv. 54; Dmitry Alexandrovich Kochkin, ulitsa Dmitria Ulyanova 4/34, korpus A, kv. 33; and Boris Vladimirovich Deryagin, ulitsa Vavilova 37a, kv. 47, all of Moscow, U.S.S.R.

No Drawing. Filed May 1, 1970, Ser. No. 33,919

Int. Cl. C01b *31/06*

U.S. Cl. 423—446 4 Claims

The invention relates to methods of producing diamond synthetically with the use of seed crystals.

According to the invention, the method of synthesizing diamond consists in contacting diamond seed crystals with an organometal compound containing at least one easily broken metal carbon bond, and is carried out at a temperature selected from the range of 300 to 1800° K. and at the resulting partial pressure of said organometal compound.

ERRATUM

For Class 424—256 see:
Patent No. 3,705,989

3,705,938

ACTIVATED POLYMER MATERIALS AND PROCESS FOR MAKING SAME

Seymour Hyman, New York, N.Y., Bruce S. Bernstein, Somerville, N.J., and Ramesh Kapoor, Seaford, Del.; said Bernstein and said Kapoor assignors to Hercules Protective Fabric Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 593,267, Nov. 10, 1966. This application Feb. 2, 1971, Ser. No. 112,053

Int. Cl. A01n *17/12*; A61j *3/00*

U.S. Cl. 424—19 97 Claims

This invention concerns non-porous, polymeric articles having active antibacterial, antifungal and combinations of antibacterial and antifungal properties. Said article comprises a preformed, solid, non-porous, polymeric substrate, and a solid non-porous layer of a polymeric composition adherently applied to at least on surface of said substrate, said composition containing at least one activating agent selected from the group consisting of antibacterial, antifungal, and combinations of antibacterial and antifungal activating agents. Said agent is distributed

within said polymeric composition of said layer and being capable of migrating from said layer into and throughout said substrate. Said agent is present in said layer in sufficient amount so that upon migration from said layer into said substrate, an effective level of antibacterial, antifungal or a combination of antifungal and antibacterial activity is provided throughout said substrate, and on at least one other surface of said substrate which is not in direct contact with said layer.

3,705,939

FUNGICIDAL COMPOSITIONS AND METHODS UTILIZING METAL COMPLEXES

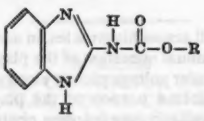
Hein L. Klopping, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 777,171, Nov. 19, 1968. This application Oct. 21, 1969, Ser. No. 868,233

Int. Cl. C01d *49/38*

U.S. Cl. 424—245 8 Claims

Metal complexes prepared by reacting (1) organic compounds having the formula



wherein R is lower alkyl, and (2) metal salts, such as zinc chloride or copper acetate, are useful as fungicides.

3,705,940

SILICIC ACID-CONTAINING DENTIFRICE

Hedwig Kirchgassner, Frankfurt am Main, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed Feb. 7, 1969, Ser. No. 797,710

Int. Cl. A61k *7/16*

U.S. Cl. 424—49 9 Claims

A dentifrice comprises a suspension in water, glycerine or a combination of both of (a) a hydrophobic silicic acid obtained by a pyrogenic process and (b) paraffin oil or a vegetable oil or vegetable fat or mixture of these oils and fats. The dentifrice may also include finely dispersed hydrophilic silicic acid or precipitated silicic acid as a thickener and polish.

3,705,941

VAPORIZABLE INSECTICIDE COMPOSITION

Claude Hennart, Seraincourt, Georges Martin, Saint-Benoit, Jean-Pierre Mandon, Poitiers, and Bernard Rabussier, Avanton, France, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed June 16, 1969, Ser. No. 833,665

Claims priority, application France, June 21, 1968, 156,025; Feb. 12, 1969, 6903313; Mar. 12, 1969, 6906859, 6906860, 6906861, 6906862

Int. Cl. A01n *9/36*

U.S. Cl. 424—219 28 Claims

Liquid hydrophobic compositions usable in an evaporator for diffusing vapors of active insecticidal substances into the atmosphere are described. The compositions comprise

(A) at least one phosphoric acid ester- or thionophosphoric acid ester-insecticide as active ingredient,

(B) at least one saturated hydrocarbon which is liquid at ambient temperature, as principal solvent, and

(C) at least one organic co-solvent which is soluble in the principal solvent and is capable of dissolving per liter an insecticidally effective amount of component (A);

the amounts of (A, (B) and (C) being so proportioned that they are equal or approximately equal to the proportions of these components which exist in the vapor mixture which evaporates from the composition by way of an evaporator into the surrounding atmosphere, the co-solvent being chosen from solid materials of low melting point and liquid materials, both being soluble in the principal solvent and possessing a boiling point at atmospheric pressure of 100–320° C. and each of the principal solvent and the co-solvent having a vapor pressure at 20° C. of 0.01–30 torr. 2,2-dichlorovinyl dimethyl phosphate (DDVP) is a preferred insecticide in these compositions.

3,705,942

TREATMENT OF GLAUCOMA EMPLOYING IMIPRAMINE OR DESMETHYLIMIPRAMINE

Edgar Grunwaldt, New York, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Sept. 29, 1969, Ser. No. 862,054

Int. Cl. A61k *27/00*

U.S. Cl. 424—244 7 Claims

Glaucoma is treated with compositions containing desmethylimipramine or imipramine optionally in the presence of an alkyl gallate and/or a sympathetic or sympathomimetic amine. A typical embodiment is an ophthalmic pharmaceutical composition containing desmethylimipramine and epinephrine.

3,705,943

DIALKYLTIN SALTS OF SUBSTITUTED PYRIDINE-1-OXIDES AS FUNGICIDES AND BACTERICIDES

Charles W. Kaufman, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

No Drawing. Continuation-in-part of application Ser. No. 596,801, Nov. 25, 1966. This application July 18, 1969, Ser. No. 843,218

Int. Cl. A01n *9/22*

U.S. Cl. 424—245 7 Claims

Certain dialkyltin salts of 2-mercaptopyridine-1-oxide and 2-hydroxypyridine-1-oxide are prepared by reacting the respective oxides with a dialkyltin salt of a low molecular weight organic or inorganic acid. The resulting salts are highly effective bactericides and fungicides which have especially low toxicity to higher animals.

3,705,944

INSECTICIDAL AND ACARICIDAL COMPOSITIONS AND METHODS USING 2-PHENYL-BENZIMIDAZOLES

Wilhelm E. Frick, Pfeffingen, Basel-Land, Horst Harle, Allschwil, Thomas Wenger, Riehen, and Anton Weiss, Basel, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

No Drawing. Original application Apr. 27, 1967, Ser. No. 634,092, now Patent No. 3,624,100. Divided and this application Mar. 18, 1971, Ser. No. 125,830

Claims priority, application Switzerland, May 6, 1966, 6,667/66

Int. Cl. A01n *9/22*

U.S. Cl. 424—273 9 Claims

New 2-phenyl-benzimidazoles which are substituted by at least three halogen and/or trifluoromethyl radicals none of which, however, is present at the phenyl radical in an ortho-position relative to the link to the benzimidazole moiety, and optionally by further substituents; as well as their alkali metal and alkaline earth metal salts; which compounds are useful as insecticides and acaricides; and insecticidal and acaricidal compositions containing such compounds as active ingredients; a method of controlling insects and acarinae, and of protecting keratinous material from damage by insects or their larvae, with the aid of such novel compounds; as well as keratinous materials protected with the aid of the said compounds.

3,705,945

PHARMACEUTICALLY ACTIVE COMPOUNDS

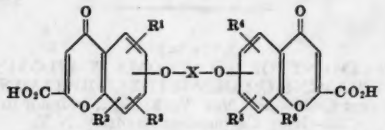
Colin Fitzmaurice and Thomas Brian Lee, Holmes Chapel, England, assignors to Fisons Pharmaceuticals Limited, Loughborough, England

No Drawing. Original application July 3, 1967, Ser. No. 650,627, now Patent No. 3,519,652. Divided and this application May 7, 1970, Ser. No. 47,923

Int. Cl. A61k *27/00*

U.S. Cl. 424—283 13 Claims

Compositions containing new compounds of the formula



and functional derivatives thereof, in which at least one of R^1, R^2, R^3, R^4, R^5 and R^6 is a substituent other than a hydrogen atom, halogen atom or alkyl or substituted alkyl group, and the remainders of R^1, R^2, R^3, R^4, R^5 and R^6 are the same or are different and each is hydrogen or a substituent other than hydrogen, and X is a straight or branched polymethylene chain which may be interrupted by one or more carbocyclic or heterocyclic rings, oxygen atoms or carbonyl groups, possess special activities as inhibitors of the effects of certain types of antigen-antibody reaction.

3,705,946

METHOD OF TREATING HYPERURICEMIA

Richard W. Dyke and Martin J. Sweeney, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed May 25, 1971, Ser. No. 146,817

Int. Cl. A61k *27/00*

U.S. Cl. 424—279 3 Claims

Mycophenolic acid employed in the treatment of hyperuricemia.

ELECTRICAL

3,705,947

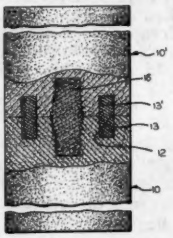
JOINING OF PREBAKED ELECTRODES

John A. Persson, 1411 Woodhill Drive, Gibsonia, Allegheny County, Pa. 15044

Filed Oct. 18, 1971, Ser. No. 190,065

Int. Cl. H05b *7/14*

U.S. Cl. 13—18 2 Claims



Prebaked carbon or graphite electric arc furnace electrodes have one or more concentric annular grooves formed in their end faces. The grooves are filled with uncured self-baking carbon or graphite paste such as is used to form electrodes which are entirely self-baked. A new electrode is joined to the stub of an operating electrode by pressing their end faces together, causing the paste in the respective ends to merge. The electrodes are connected mechanically by a conventional threaded nipple. Heat derived from the stub electrode and from resistive heating of the paste cures the paste and effects a sound joint which has good thermal and electric conductivity.

3,705,948

SYSTEM FOR CONTROLLING TONE-MODIFYING CIRCUITS BY MUSCULAR VOLTAGE IN ELECTRONIC MUSICAL INSTRUMENT

Norio Tomisawa, Hamamatsu, Japan, assignor to Nippon Jakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

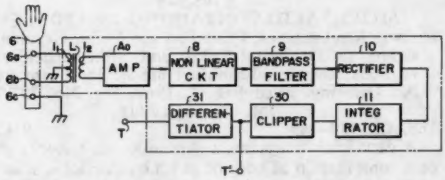
Filed March 8, 1971, Ser. No. 121,969

Claims priority, application Japan, March 9, 1970, 45/19946; March 9, 1970, 45/22748; April 1, 1970, 45/27545; April 1, 1970, 45/27546; April 4, 1970, 45/28744; April 4, 1970, 45/28745; April 17, 1970, 45/32807

Int. Cl. G10h *1/02*

U.S. Cl. 84—1.24 14 Claims

An electronic musical instrument which is controlled of its tonal effect by utilizing the muscular voltages of the player generated at his will across his muscles, in addition to the control by the usual manual operation of the playing keys. To this end, a pair of muscular voltage pickup electrodes are attached to at least one selected portion of the player's skin under which a muscular voltage appears upon contraction of the related muscle. Between the pickup electrodes and various tone-modifying circuits are provided circuits for processing the



picked-up muscular voltage and for producing control signals to the modifying circuits in specific digital or analog form based on this processed voltage, to accomplish the desired tonal effect control. A wireless transmission means may be provided between the player and the instrument to transmit the picked-up voltage or the control signals to the tone-modifying circuits for more convenient and easier control.

3,705,949

WIREWAY STRUCTURE

Irving F. Weiss, University Heights, Ohio, assignor to ECP Manufacturing Co., Cleveland, Ohio

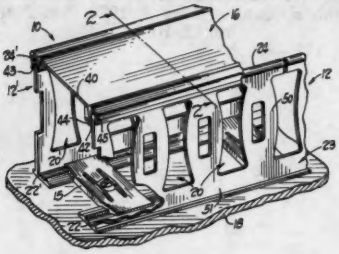
Filed Sept. 29, 1970, Ser. No. 76,507

Int. Cl. H02g *3/00*

U.S. Cl. 174—101 10 Claims

A wireway to be mounted on an electrical panelboard or the like to retain electrical wires in an orderly and accessible arrangement among electrical devices. An elongated wall that in part comprises the wireway has transverse, elongated, openings through which wires may extend. The openings in the principal embodiments are formed by fingers and are substantially wider at the ends than at the middle. Narrow passageways between the ends of the fingers permit lateral insertion of wires. Rectangular

apertures in each finger, or parallel edge portions along opposite sides of the openings at midportions, are adapted to receive a retainer used to temporarily hold wires in place during wiring.

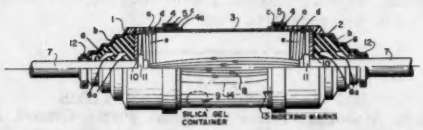


3,705,950

SEALED CONNECTOR BOX FOR ELECTRICAL CABLES

Karl Jirka, Munich, and Johann Gutlhuber, Irlbach, near Straubing, Germany, assignors to Kunststoffwerk Gebruder Anger G.m.b.H., Munich, Germany

Filed Nov. 19, 1970, Ser. No. 91,007
Claims priority, application Germany, Nov. 19, 1969, P 19 58 155.6
Int. Cl. H02g *15/08*
U.S. Cl. 174—138 F 6 Claims



A sealed connector box for electrical cables is made of a transparent synthetic material and comprises two sleeve elements having conical end portions interconnected by an intermediate tubular member by a screw connection. There are end openings in both ends of the conical end portions through which electrical cables may be inserted and spliced within the tubular element so that the splice is visible. A sealing element fills the interior of the conical end portion and is provided with a plurality of flexible internal ribs which sealingly engage the outer surface of an electrical cable passing therethrough. Other seals are provided on the end opening of each conical end portion and on the joint between a sleeve element and the intermediate tubular element.

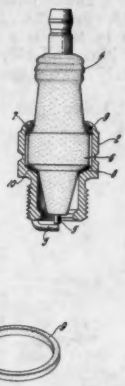
3,705,951

SPARK PLUG SEALING GASKET

John T. Rausch, Flint, and Michael Skunda, Davison, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 12, 1970, Ser. No. 88,599
Int. Cl. H01b *17/26*
U.S. Cl. 174—152 S 2 Claims

This invention relates to spark plugs and more particularly to an improved upper seal or gasket for spark plugs. The seal is initially made of 99.4% pure commercially available iron powder that upon heat treat becomes even higher in iron content to provide the necessary ductility for the gasket to seat properly.



ERRATA

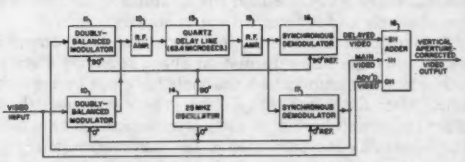
For Classes 178—5 and 178—6 see:
Patents Nos. 3,705,839 and 3,705,840

3,705,952

VERTICAL APERTURE CORRECTION CIRCUIT

Max H. Diehl, Manlius, N.Y., assignor to General Electric Company

Filed Sept. 15, 1970, Ser. No. 72,254
Int. Cl. H04n *5/14;* H03h *7/30*
U.S. Cl. 178—7.2 8 Claims



Vertical aperture correction for a television camera is achieved using but a single quartz delay line having a delay time of one horizontal line by modulating the video signal on a first carrier of given frequency and phase and supplying the modulated carrier to the delay line. The modulated carrier, thus delayed by the duration of one horizontal line, is demodulated and the modulating video signal is modulated on a second carrier of the same frequency as the first carrier but phase-displaced therefrom by 90°. The second modulated carrier, thus delayed by the duration of two horizontal lines, is demodulated and the modulating signal is combined with the undelayed video signal and the video signal delayed by one horizontal line to produce a composite, vertical aperture-corrected video signal.

3,705,953

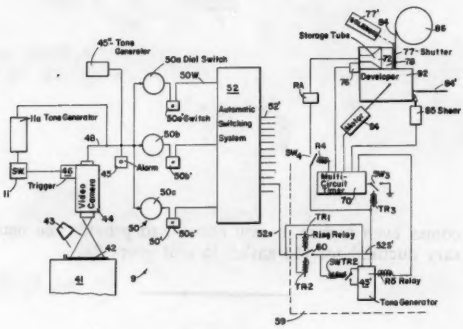
AUTOMATIC COMMUNICATION SYSTEM

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of application Ser. No. 279,031, Apr. 1, 1963, which is a continuation-in-part of application Ser. No. 723,075, Feb. 28, 1958, now Patent No. 3,084,213, which in turn is a continuation-in-part of application Ser. No. 668,348, Sept. 23, 1957, now Patent No. 3,051,777. This application May 12, 1969, Ser. No. 823,600

Int. Cl. H04n *1/00, 1/28, 1/32*

U.S. Cl. 178—6.6 A 34 Claims



An automatic communication system is provided for automatically transmitting information between a master station and one or more receiving stations wherein the communication link is automatically effected. In one form, code signals are automatically generated and are utilized to automatically operate a telephone switching system to connect the output of the master station with one or a plurality of receiving stations. Thereafter, facsimile signals are automatically transmitted on the connected circuits and are recorded. In another form, shortwave communication is automatically effected between a sending station and one or more shortwave receivers of respective receiving stations after which information is automatically transferred on the established communication channels and is recorded automatically.

A feature of the instant invention includes computer means for recording information about receiving stations with which communication channels have not been established after the generation of the proper code signals to effect the establishment of such communication channels. The apparatus includes means for automatically reproducing the same signals, which fail to make the connection the first time an attempt is made, one or a number of times thereafter in additional attempts at effecting the establishment of communication channels with all those receiving stations defined for the operation.

In a form of the instant invention, frames of image information are automatically directed into the scanning field with a video scanning device and are automatically scanned thereafter to generate facsimile signals. A connection signal generating means forms part of the scanning apparatus or is an auxiliary means cooperating with the scanning apparatus.

In another form, all signals, information and connection signals are recorded on a single recording member such as a magnetic tape and are reproduced by respective reproduction transducers as the tape is automatically driven to generate channel connection signals in the proper sequence with associated facsimile signals.

3,705,954

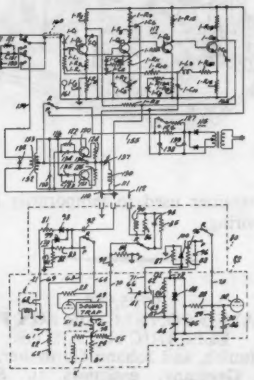
VIDEO TRANSDUCING APPARATUS

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Original application June 27, 1967, Ser. No. 649,256, now Patent No. 3,596,008, dated July 27, 1971. Divided and this application May 4, 1970, Ser. No. 34,504

Int. Cl. H04n *5/76*

U.S. Cl. 178—6.6 A 1 Claim



Monochrome and color television recording and playback circuitry for coupling of a video magnetic transducer head with a standard broadcast television receiver. High frequency bias having a frequency of less than 4.4 megahertz, and special head configurations of sheet magnetic material having substantially increased cross sectional perimeter for eddy currents accommodating bias frequencies up to ten megahertz.

3,705,955

BLIND LANDING AID SYSTEMS

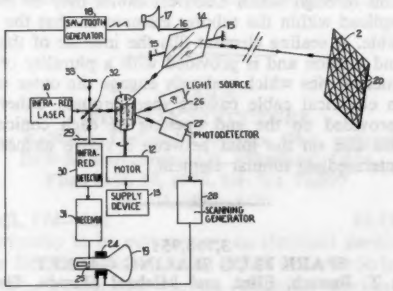
George Assouline, Pierre Conjeaud, Pierre Girault, and Eugene Leiba, Paris, France, assignors to Thomson-CSF

Filed Jan. 9, 1970, Ser. No. 2,191

Claims priority, application France, Jan. 24, 1969, 6901403

Int. Cl. H04n *3/08*

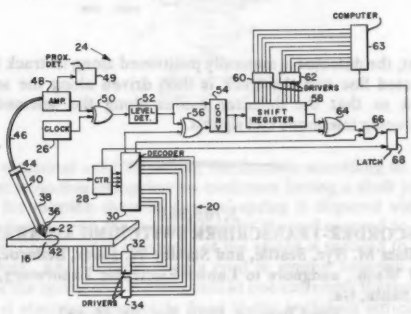
U.S. Cl. 178—6.8 6 Claims



A blind landing aid system, for visualizing, on board an aircraft, a landing runway this aircraft is approaching, this system comprising an infrared laser source, a device for causing the beam emitted by this source to scan the

ground, in front of the aircraft, according to a television pattern, reflector beacons bounding the runway for reflecting back on itself any incident infrared beam, a receiver for detecting the infrared beam emitted by this source after reflection on these beacons, and a cathode-ray tube whose screen is scanned in synchronism with the scanning performed by the infrared beam and whose electron beam is controlled by the signals supplied by the receiver, so as to visualize the beacons as luminous spots on the screen of the cathode-ray tube.

3,705,956
GRAPHIC DATA TABLET
Michael L. Dertouzos, Waban, Mass., assignor to Computek, Inc., Cambridge, Mass.
Filed Jan. 25, 1971, Ser. No. 109,205
Int. Cl. H04n *1/00*
U.S. Cl. 178—18 **11 Claims**



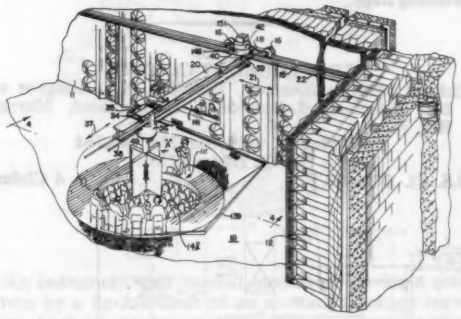
An electromagnetic sensor is held in spaced relation to a grid network having a plurality of conductors defining a Gray Code pattern. Each of the conductors corresponds to a bit in the Gray Code, the grid network characterized by differences which correspond to the differences in the bits of the Gray Code. As current is passed sequentially through each of the conductors, a voltage is induced in the sensor. The location of the sensor with respect to the grid network is determined by detecting the phase of the voltage induced in the sensor.

ERRATUM

For Class 179—18 see:
Patent No. 3,705,523

3,705,957
TRANSLATIONAL, ROTATIONAL AND VERTICAL MOVEMENT CONTROLLED SOUND SOURCE PICK-UP SYSTEM
David S. Goldsmith, 8359 S. Crandon, Chicago, Ill. 60617
Filed Feb. 19, 1970, Ser. No. 12,814
Int. Cl. H04r *5/00*
U.S. Cl. 179—1 G **45 Claims**

A sound system for recording or broadcasting in which plural microphones are arranged for intensity sterophony or spaced microphone technique pickup of sound, and in which the microphones are mounted for controlled translational and rotational movement as a whole within a recording studio at a predetermined rate in relation to the tempo of a composition being played. Typically, musicians are positioned so as to totally surround the microphones, and microphone movement enables the eventual listener to be given the various novel musical impressions and effects caused by apparent movement of so-called virtual musical sources, including movement totally about the listener, whose selective hearing and auditory pursuit tracking capabilities are utilized. A suspended column carrying four pairs of microphones is mounted for such rotational and translational movement. Therefore, these three axes of movement may be made to correspond to the *x*, *y*, and displaced *z*-axes of a numerical control system which controls column movement within a specially constructed sound studio in which musicians are disposed in a ring-like formation. The microphones are of a highly directional response capability type able to pick up sound from the sectors of the ring of musicans toward which they are directed. These microphones are protected from incidence of sound from the slide by baffle vanes which prevent spatial distortion. Music thus picked up, upon reproduction, has an apparent or virtual source position determined by the location of the microphones during

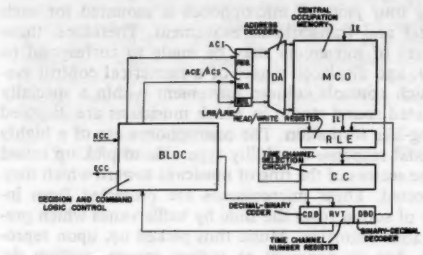


recording. In addition to rotation and translation as a group, the microphones may be declinated in vertically coincident pairs for altering their directional axes in response to the distance between them and the sound source. The composer marks the musical score with suitable symbols to indicate the desired disposition of virtual sources as the score is played. The numerical control system is programmed to impart to the microphone and baffle assembly the necessary movements for positioning the microphones during recording. Tone detectors, responsive to preselected tones in the music, are associated with the numerical control system for controlling the rate of information input to the control system reader, thereby controlling the rate or pace of movement of the movably mounted microphones. This serves as a pacing means such that the microphones will be moved in response to the time kept by the musicians during rendition of the musical composition.

3,705,958
PATH TESTING DEVICE FOR TIME CHANNEL CONNECTION NETWORK
Jean-Baptiste Jacob, Saint Quay Perros, France, assignor to C.I.T. Compagnie Industrielle des Telecommunications, Paris; and Societe Lannionnaise D'Electronique, Lannion, both of France
Filed Nov. 17, 1970, Ser. No. 90,285
Claims priority, application France, Nov. 17, 1969, 6939464
Int. Cl. H04q *11/04*
U.S. Cl. 179—18 J **8 Claims**

A path testing device for a time channel connection network employs a decision and control network which, through its permanent connection with a central processing computer, delivers control signals to various elements connected with the central memory for selecting and storing an available time channel on one of a plurality of time division multiplex com-

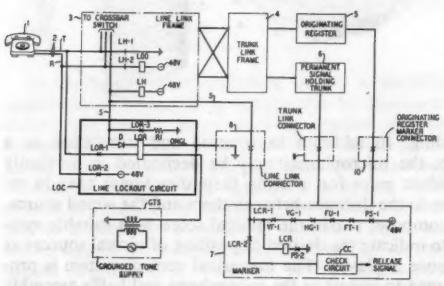
munication paths possible through an intermediate stage of a multiple stage interconnection time channel switching network. The path testing device is responsive to an incoming time slot and an outgoing time slot being accessed to and from the input stage and sequentially examines available time slots from a number available within the intermediate time switching stage.



3,705,959
LINE LOCKOUT CIRCUIT

Richard Maurice Swanson, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 17, 1971, Ser. No. 143,764
Int. Cl. H04m *3/18*
U.S. Cl. 179—18 F **4 Claims**



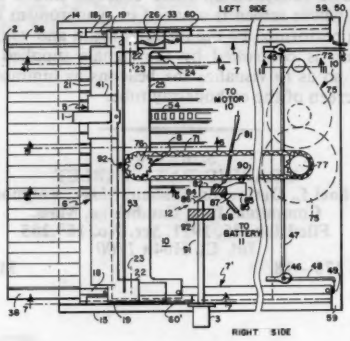
A station line lockout circuit in a common control telephone system employing a crossbar switching network is disclosed. The circuit comprises a single lockout relay which is bridged onto a station line and is automatically operated by a common control circuit after an originating register timeout occurs due to a permanent signal. The lockout relay cooperates with the common control circuit to activate a crossbar switch line hold magnet for opening the conventional line relay circuit to block the initiation of dial tone service requests until after the permanent signal is cleared. The lockout relay locks operated to the station line, supplies permanent signal tone to the line, and maintains the hold magnet activated after the common control circuits release upon determining that the lockout is effective.

3,705,960
AUTOMATIC REPERTORY TELEPHONE DIALER WITH PERFORATED STRIP NUMBER STORAGE

Robert P. Evans, 151 Tremont St., Boston, Mass.; Joseph P. Hussar, 74 Federal St., Weymouth, Mass.; Gerald R. Evans, 11 Channing St., Newton, Mass., and Robert T. Dunn, 4 Cedar Ridge Drive, Bedford, Mass.

Filed Feb. 5, 1970, Ser. No. 9,028
Int. Cl. H04m *1/45*
U.S. Cl. 179—90 R **4 Claims**

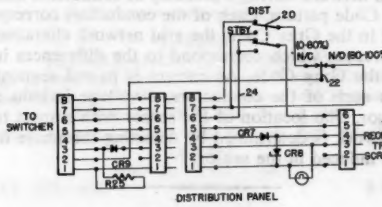
Telephone signalling apparatus stores sets of signals along stationary parallel adjacent lines each set being stored along a given line. The detector for the signals slides on a track with is transverse to the lines so that the detector can be moved to a selected line and the detector track is movable along a second track in a direction parallel to the lines. In a preferred embodiment, the detector is manually positioned along its track to the selected line and the track is then driven along the second track so that the detector moves along the selected line producing telephone call signals.



3,705,961
RECORDER-TRANSCRIBER SWITCHING APPARATUS

William M. Nye, Seattle, and Stanley W. Jones, Bellevue, both of Wash., assignors to Lanier Electronic Laboratory, Inc., Atlanta, Ga.

Filed June 24, 1970, Ser. No. 49,432
Int. Cl. G11b *15/06*; H04m *11/10*
U.S. Cl. 179—100.1 DR **10 Claims**



An automatic standby device makes a recorder-transcriber unavailable to a subsequent dictator when the dictated but untranscribed tape in the recorder-transcriber exceeds a predetermined percent of its usable capacity. The device makes the recorder-transcriber automatically available for subsequent dictation when the amount of used percentage of capacity of the machine drops to a predetermined smaller percent of capacity, when all other available recorder-transcribers are in use, or when all other recorder-transcribers are full. Another feature is that every other pulse of a rectified standard 60-cycle per second current is utilized, with the pulses spaced by a time interval sufficient to allow the control circuits and mechanical movements in both the switching apparatus and recorder-transcriber to effectively seize an available recorder-transcriber prior to the next pulse. The dictate station energizes a stepping circuit when the handset is raised (off-hook condition) only after a predetermined delay to preclude the stepping circuit from responding to simultaneous off-hook signals from multiple dictate stations. Only a portion of the rectified 60-cycle voltage is utilized in the control circuits so that the maximum voltage capability of the transistor components in the circuits is not exceeded.

3,705,962

ELECTRICAL CORD RETRACTING MECHANISM

Lionel W. Banister, 2218 Hazard, Apt. 6, Houston, Tex.

Filed June 2, 1971, Ser. No. 149,199
Int. Cl. H02g 11/02
U.S. Cl. 191—12.4 12 Claims

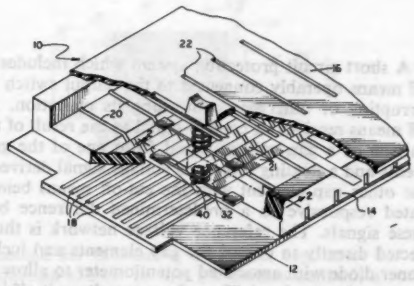
An electrical cord retracting mechanism according to the present invention comprises an enclosure having a shaft journaled for rotation therein. A spiral spring is disposed within the enclosure with the inner extremity thereof secured to the shaft while the outer extremity of the spring is secured to the enclosure. An electrical supply cord is wound between the coils of the spring and is connected at one extremity thereof to an inlet electrical receptacle fixed to the enclosure structure while the other extremity of the supply cord terminates in a second supply receptacle. A mandrel that is disposed within the enclosure is rotatable about the shaft and receives an electrical appliance cord being wound thereabout. One extremity of the appliance cord is received within the second supply receptacle while the other extremity thereof extends through an aperture formed in the housing in order to allow ready access thereto.

3,705,963

MATRIX SWITCH WITH SLIDE TYPE ACTUATOR AND CONDUCTIVE SPRING COMMON TO GROUND CONTACT AND MOVABLE CONTACT

William L. King, 12059 Milton Ave., Wheaton, Md. 20902, and Edward S. Stein, 5717 Nevada Ave. NW., Washington, D.C. 20015

Filed Aug. 5, 1971, Ser. No. 169,181
Int. Cl. H01h 1/44, 15/06
U.S. Cl. 260—16 C 3 Claims



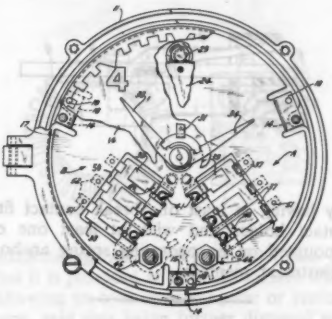
A switch device including a series of spaced conductor points and a sliding switch bar movable from one to another of said conductors with means biasing said sliding switch bar into continuous contact, alternatively, with an indexing surface and said spaced conductor points.

3,705,964

POSITION INDICATING INSTRUMENT WITH CIRCUIT CONTROL SWITCHES

Robert F. Romanowski, Rochester, and Michael Cellini, Henrietta, N.Y., assignors to Qualitrol Corporation, Fairport, N.Y.

Filed Dec. 18, 1970, Ser. No. 99,457
Int. Cl. H01h 43/10
U.S. Cl. 200—56 R 11 Claims



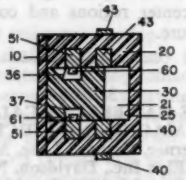
An instrument with internal mechanism having a gear driven by a flexible shaft of an associated voltage regulator. As the gear turns, studs thereon cooperate with tripping elements to actuate circuit control switches mounted in groups upon a stationary plate. Selective adjustment may be made of individual switches relative to the tripping elements. As the gear turns, indicators are moved to indicate the extent of directional turning of the gear. The internal mechanism can be assembled or removed as a unit through a front end of the housing covered by a detachable bezel. Readily removable screws secure the unit in the housing.

3,705,965

SPIN SWITCH

William Pellet, Succasunna, N.J., assignor to the United States of America as represented by the Secretary of the Army

Filed Sept. 10, 1971, Ser. No. 179,369
Int. Cl. H01h 35/14
U.S. Cl. 200—61.53 2 Claims



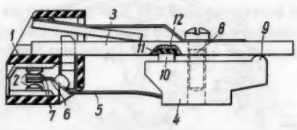
This invention relates to a normally closed, double pole, double throw spin actuated electrical switch for safing and arming a missile. The device uses a sealed housing means, a terminal means operatively sealed within said housing having a pair of normally opened contacts and a pair of normally closed contacts, a piston pole

means slidably positioned and biasedly held within the housing and responsive to the centrifugal forces created by the spin of the launched missile carrier, the spin force closes the normally open contacts and opens the normally closed contacts.

3,705,966
ADJUSTABLE RELAY CONTACT

Karl Heinz Bergmann, Kirchvers, Germany, assignor to Deutsche Fernsprecher Gesellschaft mbH, Marburg, Germany

Filed Apr. 19, 1971, Ser. No. 135,149
Claims priority, application Germany, Apr. 18, 1970, P 20 18 627.0
Int. Cl. H01h 1/34
U.S. Cl. 200—166 M 8 Claims

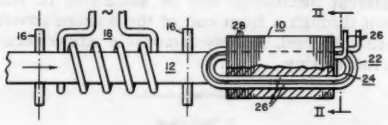


A relay having at least one break contact fitted to a break-contact holder and with at least one operating contact mounted on an operating spring anchored to a spring adjustment member.

3,705,967
INDUCTION HEATING METHOD

George F. Bobart and William A. Emerson, Ellicott City, Md., assignors to United States Steel Corporation

Continuation-in-part of application Ser. No. 835,951, June 24, 1969, now Patent No. 3,562,470. This application Feb. 8, 1971, Ser. No. 113,255
Int. Cl. H05b 5/00
U.S. Cl. 219—10.41 4 Claims



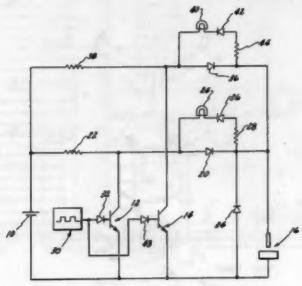
Disclosed herein is an induction heating method for continuous rapid heating of an elongated metal workpiece of rectangular cross-section. A continuous-cast rectangular-section steel strand, while travelling from caster mold to reducing rolls in a continuous caster line, is sequentially passed longitudinally through two types of induction heating means operating in combination to heat the strand flat-center regions and corner regions up to rolling temperature.

3,705,968
MULTIPLE GAP ELECTRICAL DISCHARGE MACHINING CIRCUIT

Dalton R. Verner, Orchard Lake, Mich., assignor to Elox Inc., Davidson, N.C.

Filed June 25, 1971, Ser. No. 156,899
Int. Cl. B23p 1/08
U.S. Cl. 219—69 S 4 Claims

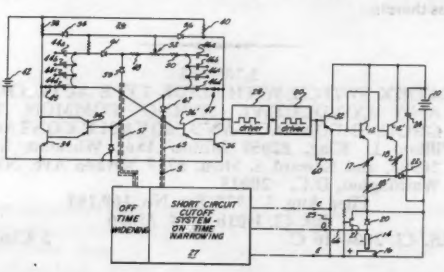
The circuit includes an arrangement for providing electrical discharge machining across one or more gaps with power pulses derived from a common power supply. Each machining gap includes an electronic switch and has associated with it a shunt diode of blocking polarity to prevent gap inductance from breaking down the associated switch. When several electronic switching means are used, they are each connected through an isolating diode to a common pulse generator or triggering means for turning them on and off at the same time. Also included in each gap circuit is a series diode of a polarity to pass power pulses to the gap with a detector means connected across the series diode for providing an indication of component failure in the associated gap circuit when several switches are connected in parallel.



3,705,969
CUT-OFF PROTECTION SYSTEM FOR ELECTRICAL DISCHARGE MACHINING POWER SUPPLY

Oliver A. Bell, Jr., Mooresville, N.C., assignor to Colt Industries Operating Corp., Davidson, N.C.

Filed Nov. 8, 1971, Ser. No. 196,439
Int. Cl. B23p 1/08
U.S. Cl. 219—69 S 24 Claims



A short circuit protection system which includes a cut-off means operably connected to the output switch for interrupting or otherwise controlling its operation. A cut-off means receives its control signal as the result of a comparison of a gap voltage signal from one of the gap elements and a floating reference voltage signal derived from the other gap element with the cut-off means being activated responsive to a predetermined difference between these signals. The reference voltage network is thus connected directly to one of the gap elements and includes a Zener diode with associated potentiometer to allow adjusting of reference level. The reference voltage itself is keyed into operation in phase with the output switch conduction and thus in phase with each gap discharge.

3,705,970

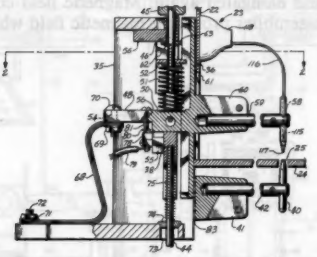
APPARATUS FOR WELDING A CONDUCTOR THROUGH COLD FLOWABLE INSULATION

John F. Weatherman, Santa Ana, Gary J. Walker, La Crescenta, and Larry R. Conley, Simi, Calif., assignors to Micro-Technology, a division of Sterling Electronics Corporation, Westlake Village, Calif.

Original application July 28, 1969, Ser. No. 857,258, now Patent No. 3,627,970. Divided and this application Aug. 9, 1971, Ser. No. 170,259

Int. Cl. B23k *9/28, 11/10*

U.S. Cl. 219—86 12 Claims



A conductor, surrounded with cold flowable insulation, is welded to a terminal pin, e.g., by engaging the conductor and the pin between a pair of unheated welding electrodes. The electrodes are urged together with a force which reaches a value greater than a desired welding force value and is sufficient to cause the insulation to undergo cold flow out of a path between the electrodes via the conductor and the pin, thereby to render the path conductive. The force applied to the electrodes is then decreased to the desired welding force value and a pulse of welding current is passed along the conductive path when the desired force value is achieved. The current pulse is applied as the force applied to the electrodes decreases and is completed, and the molten metal formed by the current pulse is solidified, before such force is completely removed. The conductor is supplied through a passage formed in one of the electrodes.

3,705,971

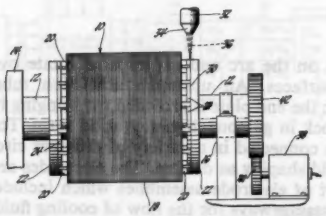
INDUCTION MOTOR FABRICATION METHOD

Linos J. Jacovides, Troy, Mich., and David M. Lyon, La Grange, and Richard M. Fischer, Naperville, Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 13, 1970, Ser. No. 63,451

Int. Cl. B23k *15/00*

U.S. Cl. 219—121 EM 2 Claims



A method for fabricating a squirrel cage rotor for an AC induction motor. In this fabrication method, a rotor core made of magnetic laminations is provided with copper conductor bars protruding beyond the respective ends of the core body and copper end rings positioned to abut the ends of the conductor bars at the respective ends of the core body. Each conductor bar is fused to its respective end rings by electron beam welding wherein an electron beam is focused on areas of the conductor bar and the end ring adjacent the conductor bar for a time sufficient to fuse the two members.

3,705,972

PIPPED PIPES AND MANUFACTURING METHOD FOR SAID PIPPED PIPES

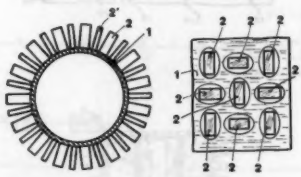
Benito Luigi Trojani, Via Cortivallo 32, Lugano, Italy

Filed Nov. 8, 1971, Ser. No. 196,451

Claims priority, application Italy, Oct. 7, 1971, 29,607/71

Int. Cl. B23k *9/20*

U.S. Cl. 219—107 2 Claims



A manufacturing method for pipped pipes, characterized in that it is provided at its outer surface with a series of pips, showing an oval or rectangular or prolonged sectional shape, said pips being further disposed so that the larger sides or axes thereof are orthogonal relative to those of the adjacent pips.

3,705,973

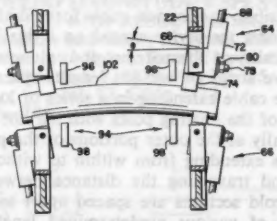
RESISTANCE HEATING APPARATUS FOR ELONGATED WORKPIECES

Norbert R. Balzer, Parma, and Joseph E. Arnosky, Broadview Heights, Ohio, assignors to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Dec. 29, 1970, Ser. No. 102,299

Int. Cl. H05b *1/00*

U.S. Cl. 219—156 11 Claims



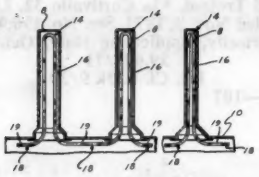
An apparatus for resistance heating an elongated workpiece wherein the shaft is transversely gripped between two spaced apart resistance heating contacts. Each contact includes first and second portions having shaft receiving areas in order to increase the effective gripping and heating area between the contacts and shaft. Each portion is pivotally mounted to a contact arm so as to be arcuately moveable in a plane perpendicular to the shaft. The contact arms extend generally transverse to the shaft and the associated arms for each first and second portion include force means for moving the arms between a first opened position and a second heating position wherein the contact portions clampingly engage the workpiece. The arcuate movement provided for each contact portion permits substantial contact-workpiece area contact for a workpiece having substantial transverse run-out.

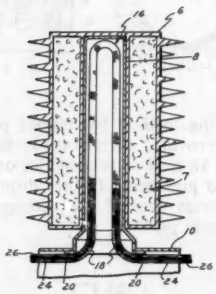
3,705,974

HAIR SETTING APPARATUS

Gosta Nilsson, Malmo, Sweden, assignor to Springfield Wire, Inc., Springfield, Mass.

Filed Dec. 2, 1970, Ser. No. 94,341
Int. Cl. A45d 4/10; H05b 1/00
U.S. Cl. 219—222 1 Claim





Electrical hair setting apparatus having a plurality of heating elements in the form of tubular columns or posts of different diameters on which hair rollers or curlers to be uniformly heated may be removably fitted for heating preparatory to use in hair setting. A generally uniform diameter, flexible, continuous, cable formed of a resistance wire of uniform resistivity wound on a flexible core and having a plurality of alternate hot and cold sections formed by conductive strips of various lengths spaced along the length of the cable extending in a series of loops into and out of each of the heating posts with the hot sections disposed generally at the outer portions of the posts and the cold sections extending from within to without the heating posts and traversing the distance between adjacent posts. The cold sections are spaced apart so as to leave hot sections of various predetermined lengths with the longer hot sections being disposed in the larger diameter posts and the shorter hot sections in the smaller diameter posts whereby the power generated and heat given off by each post is a function, at least in part, of said predetermined length.

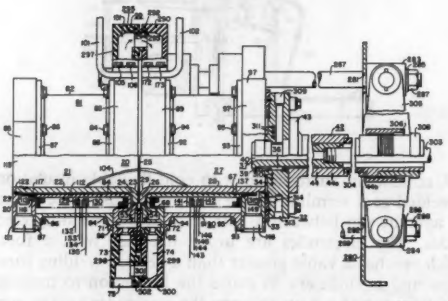
3,705,975

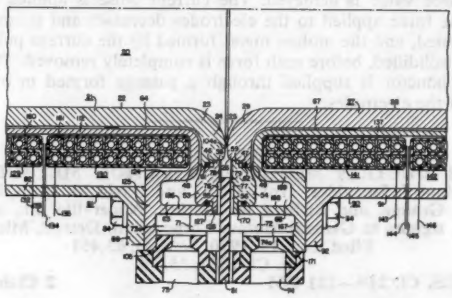
SELF-STABILIZING ARC HEATER APPARATUS

Charles B. Wolf, Irwin, and Maurice G. Fey, Turtle Creek, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 2, 1970, Ser. No. 15,446
Int. Cl. H05b 7/18
U.S. Cl. 219—383 18 Claims

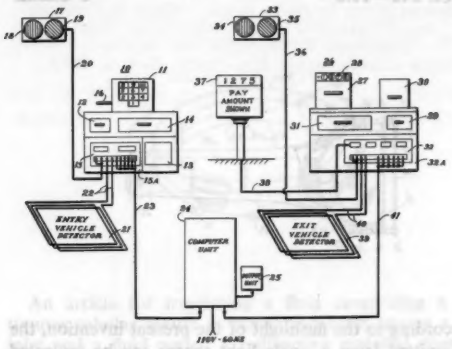
An arc heater has two generally cylindrical electrodes which together with an upstream end plate form substantially the entire enclosure of an arc chamber. Two electrodes are electrically insulated from each other and separated by a very narrow gap through which process gas is brought into the chamber at a very high velocity through a substantially cylindrical path through the gap. A sufficient system voltage is maintained across the electrodes at all times to cause electrical breakdown between electrodes in the narrow gap. The arc initially forms in the gap, is quickly blown by the high velocity gas out of the gap into the chamber and may become elongated to a length whereat the voltage required to maintain the arc exceeds the breakdown voltage of the gap whereupon flashover in the gap occurs, the arc momentarily returning to the gap only to be immediately blown into the arc chamber and elongated again. Magnetic field coils in the electrode assemblies provide a magnetic field which exerts





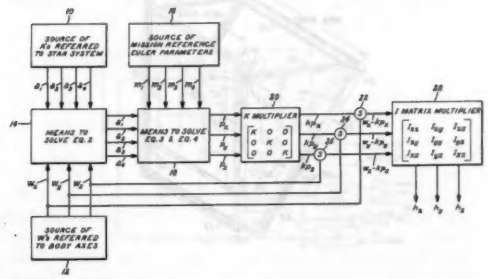
a force on the arc and causes it to rotate over the electrode surfaces. An upstream admission tube extending through the end plate is provided for bringing in additional feed stock in gaseous, liquid or solid form. The field coils may be connected in a variety of different circuits to provide field shaping as desired. The electrodes and field coils are part of electrode assemblies which include means defining passageways for the flow of cooling fluid to conduct heat flux from the arcing surfaces. The upstream electrode assembly is mounted on two pairs of linear hole bearings adapted to move on two axially extending tie rods, and all electrical, gas and water connections to the upstream electrode assembly are flexible so that the arc chamber can be opened without any major disconnecting of the equipment. When the chamber is opened, the electrodes may be slidably removed from the remainder of the assemblies.

3,705,976
REVENUE CONTROL SYSTEM FOR TOLL ROADS
Michael M. Platzman, 541 Green Place, Woodmere, N.Y.
Filed Nov. 16, 1970, Ser. No. 89,683
Int. Cl. G08g 1/015; G06k 17/00
U.S. Cl. 235—61.8 A 30 Claims



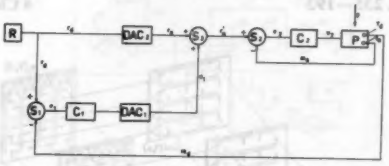
A system for automatically reconciling the revenues collected, with the vehicle type and distance travelled over a toll road. The system is applicable to a barrier type configuration where the amount collected by the collector is reconciled with the amount automatically determined by the type of vehicle passing the barrier terminal. In the closed loop system information is taken at the entrance to the toll road and is transmitted to a computer. A ticket is encoded at the entering terminal. The tickets are decoded at the exit as well as additional information taken at the exit which is also transmitted to a computer for further reconciliation. The fee is automatically computed and displayed at the exit terminal directly from the tickets. Non-revenue transactions and credit card transactions are accommodated and checked for validity by the computer.

3,705,977
ATTITUDE CONTROL SYSTEM
Kent R. Folgate, Phoenixville, Pa., assignor to General Electric Company
Filed Oct. 14, 1970, Ser. No. 80,582
Int. Cl. G05d 1/08; G06f 15/50
U.S. Cl. 235—150.25 4 Claims


SOURCE OF Ra REFERRED TO STAR SYSTEM
SOURCE OF MISSION REFERENCE EULER PARAMETERS
MEANS TO SOLVE EQ. 5
MEANS TO SOLVE EQ. 3 & EQ. 4
K MULTIPLIER
T MATRIX MULTIPLIER
SOURCE OF Wb REFERRED TO BODY AXES

Given data representative of existing and desired orientation of freely rotatable body, unique axis is determined around which a single rotation no greater than a straight angle will move body to desired orientation. Components of angular velocity arbitrarily proportional to components of unique axis are substracted from existing components of angular velocity of body, and change in body angular momentum corresponding to these is calculated. Control means (e.g., control gyroscopes) are controlled responsively to calculated result to contribute components of required angular momentum change.

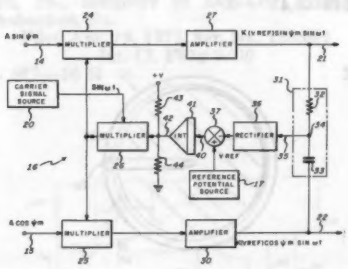
3,705,978
TIME SHARED DIGITAL AND ANALOG PROCESS CONTROL
Lucien Amede De Schamphelaere, Edegem, Belgium, assignor to Agfa-Gevaert, Mortsel, Belgium
Filed Sept. 9, 1970, Ser. No. 70,676
Claims priority, application Great Britain, Sept. 10, 1969, 44,596/69
Int. Cl. G05b 6/02; G06j 3/00
U.S. Cl. 235—151.1 11 Claims



A digital computer is used in a time sharing technique to control a plurality of control circuits. The frequency of sampling *f*, may be low in comparison with the frequency of sampling in conventional direct digital control, and the capacity of the digital computer correspondingly be increased, if each variable in the process is controlled according to an analog control, and the analog reference value in the analog control is derived from a digital reference value which is sequentially corrected in accordance with a correction value which is obtained from the comparison of said digital reference value with a digital value derived from the process.

3,705,979
Patent Not Issued For This Number

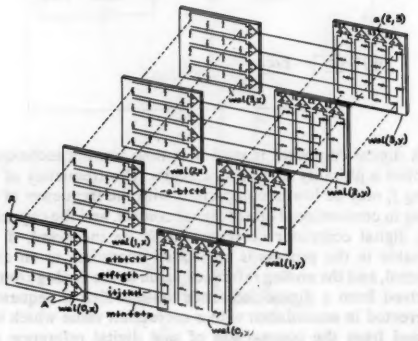
3,705,980
CONTROLLED MAGNITUDE REPEATER FOR SYNCHRO AND RESOLVER SIGNALS
David R. Brickner and Sidney T. Schell, Phoenix, Ariz., assignors to Sperry Rand Corporation
Filed Jan. 2, 1970, Ser. No. 55
Int. Cl. G06g 7/22
U.S. Cl. 235—186 33 Claims



This application describes a controlled magnitude repeater for synchro and resolver signals having undesired variations in magnitude. The repeater comprises adjusting means responsive to the angle signals for providing corresponding repeated angle signals. Combining means are

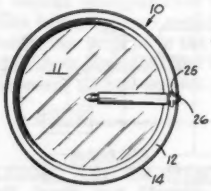
included for combining the repeated angle signals providing a signal whose magnitude is independent of the angle and dependent on the undesired magnitude variations. A reference signal is provided for comparison with the combined signal thereby providing an error signal. The error signal is fed back to the adjusting means to adjust the repeated angle signals thereby rendering them independent of the undesired magnitude variations.

3,705,981
SEQUENCY FILTERS BASED ON WALSH FUNCTIONS FOR SIGNALS WITH TWO SPACE VARIABLES
Henning Friedolf Harmuth, Bethesda, Md., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Oct. 5, 1970, Ser. No. 77,996
Int. Cl. G06f *15/34*; G06g *7/26*
U.S. Cl. 235—193 4 Claims



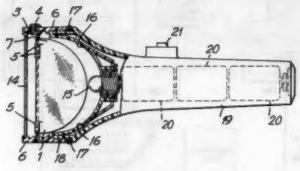
The present invention relates to a sequency sampling filter based on Walsh functions for signals having two space variables, x and y. Voltages derived from the x, y plane of a space domain are transformed into voltages in the k,m plane of the sequency domain. The filtering process is performed by not feeding certain voltages $a(k,m)$ to the circuit which performs the inverse transformation of voltages in the sequency domain back into the space domain.

3,705,982
ILLUMINATED SERVING TRAY
Richard C. Smolinski, 72 Mar Vista Dr., Monterey, Calif.
Filed Dec. 30, 1970, Ser. No. 102,678
Int. Cl. F21v *33/00*; A47g *23/06*
U.S. Cl. 240—6.4 6 Claims



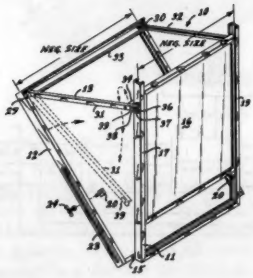
An illuminated serving tray with a depth sufficient to removably receive and hold a conventional penlight flashlight, with a translucent pane thereover preferably presenting a non-skid textured upper surface.

3,705,983
FLASHLIGHT
Naojiro Yamada, 30–11, Yahiro 1-chome, Sumida-ku, Tokyo-to, Japan
Filed May 11, 1970, Ser. No. 36,235
Claims priority, application Japan, May 10, 1969, 44/43,144
Int. Cl. F21l *9/00, 15/04*
U.S. Cl. 240—10.6 5 Claims



According to the flashlight of the present invention, the light emitted from a single light source can be projected either as a white light for illumination or as a red light for signal or warning purposes, so that the flashlight can be used for multiple purposes. The present invention, in order to attain this end, comprises a filter member disposed in front of a single illuminating light source, a mechanism for opening and closing this filter member, a mechanism for effecting the opening and closing of said filter member with "one touch" (or single) operation, and a mechanism for retaining the opened or closed condition.

3,705,984
PORTABLE CASSETTE HOLDER AND PATIENT SUPPORT FOR CHEST X-RAYS
John Marcus Westenberger, Garden Grove, Calif., assignor to Westric Cutting Tool, Inc., Stanton, Calif.
Filed Mar. 9, 1971, Ser. No. 122,442
Int. Cl. G01n *21/00*; H01j *37/20*
U.S. Cl. 250—50 3 Claims

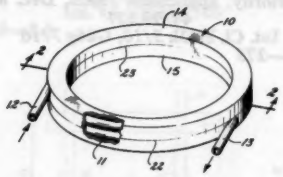


A portable holder for X-ray film cassettes for supporting a bedridden patient in a desired position with respect to the cassette for a chest X-ray. A collapsible frame is provided that holds a cassette in an angular relationship with the bed whereby both the chest of the patient leaning back on the cassette in the frame and the cassette are disposed in parallel plane and substantially perpendicular to the X-ray beam.

3,705,985
FLUID IRRADIATOR AND PROCESS FOR ITS MANUFACTURE

Bernard Manning, Annandale, and Sigurd E. Nelson, Springfield, Va., assignors to Nuclear Associates, Inc.

Filed June 27, 1969, Ser. No. 837,221
Int. Cl. G21b 5/00
U.S. Cl. 250—106 S 7 Claims

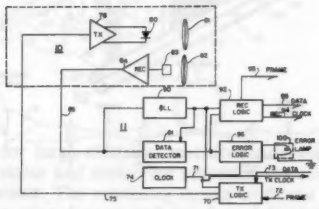


An article for irradiating a fluid comprising a continuous tubular matrix in curvilinear form having a fluid inlet and a fluid outlet; a radioactive material dispersed substantially uniformly in the matrix to provide an annular radiation source; and a protective shield surrounding the matrix to prevent escape of radioactive energy to unwanted locations. A process for the preparation of a fluid irradiating article comprises in combination the steps of providing a material capable of being made radioactive; providing a porous tubular matrix which will have a half-life less than said material capable of being made radioactive when said matrix and said material are made radioactive by the same means for the same period; depositing said material substantially uniformly in at least a part of the porous portion of the porous tubular matrix; sealing at least the outer surface of the material containing tubular matrix to prevent escape of deposited material therefrom; and subjecting the resulting sealed tubular matrix to a means for making the deposited material radioactive.

3,705,986
OPTICAL DATA TRANSMISSION SYSTEM

Ray W. Sanders and David W. Luce, Los Angeles, and William Quan, Oxnard, Calif., assignors to Computer Transmission Corporation, Los Angeles, Calif.

Filed Jan. 25, 1971, Ser. No. 109,236
Int. Cl. H04b 9/00
U.S. Cl. 250—199 6 Claims

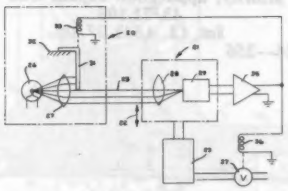


Disclosed is a point-to-point digital data transmission system employing pulse modulated infrared or light beams. The system includes a pair of optical transceiver units which link one computer installation to another via line of sight communications. The system also includes interface units connecting respective optical units to their associated computer installation. The interface units encode, modulate, demodulate and transfer received data. The system includes means to automatically synchronize with incoming data and further provide a source of synchronizing signals for use by associated computer equipment.

3,705,987
OPERATING DIFFERENTIAL EXTENDER FOR PHOTOELECTRIC EYE OR EQUIVALENT SENSING DEVICE

Dudley S. Clarke, Westchester, and Jack Camera, Chicago, Ill., assignors to Autoquip Corporation, Chicago, Ill.

Filed Oct. 7, 1971, Ser. No. 187,243
Int. Cl. G01j 1/20; G05b 1/06; H01j 39/12
U.S. Cl. 250—201 6 Claims

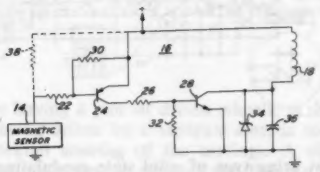


Where one component is to be oriented with respect to another component in a direction transverse to a line extending between the components, a light beam is established between the components along that line. This light beam extends from a light source to a photoelectric eye. When the light beam is broken (or established), as a result of the components being mispositioned, a motor is energized to cause movement in a direction to reestablish (or break) the light beam. To obtain a differential between the relative position of the components when the light beam is broken (or established) as compared to when it is established (or broken) a shutter is used to cut off a side of the beam which side is oriented in the direction of movement with respect to the remainder of the beam. By masking off a side of the light beam as the components are drifting out of orientation with respect to each other and by removing the mask when a corrective movement is undertaken, the differential is achieved. In other embodiments the beam is unmasked at the time of drifting out of orientation occurs and partially masked during the period of corrective movement.

3,705,988
TRANSISTOR IGNITION SYSTEM

Ronald G. Moyer and Thomas M. Emory, Jr., Conshohocken, Pa., assignors to Digi-Log Systems, Inc., Conshohocken, Pa.

Filed Apr. 19, 1971, Ser. No. 135,001
Int. Cl. F02p 9/00
U.S. Cl. 307—10 R 5 Claims



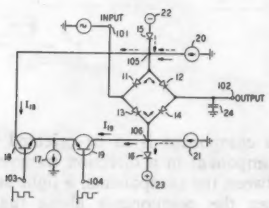
A reliable transistor ignition system that can be installed in existing automobiles without replacing the

coil includes a multipole magnet attached to the distributor shaft, a magnetic field sensing device adjacent the magnet, and an amplifier-control that uses high voltage, high power transistors.

3,705,989
FISH DISEASE TREATMENT WITH NAPHTHYRIDINE DERIVATIVES

Yasuo Oshima, Tokyo, Nobuhiko Nakazawa, Urawa-shi, Senkichi Nagasaki, Tokyo, Takeo Naito, Ichikawa-shi, Yasuaki Osada, Tokyo, Naoya Okusa, Chiba-shi, Akira Inuaki, Sakura-shi, and Kazuyuki Tanaka, Chiba-shi, Japan, assignors to Dalichi Seiyaku Company Limited, Tokyo, Japan

No Drawing. Filed Sept. 25, 1969, Ser. No. 861,147
Claims priority, application Japan, Oct. 2, 1968, 43/71,103
Int. Cl. A61k *27/00*
U.S. Cl. 424—256 9 Claims

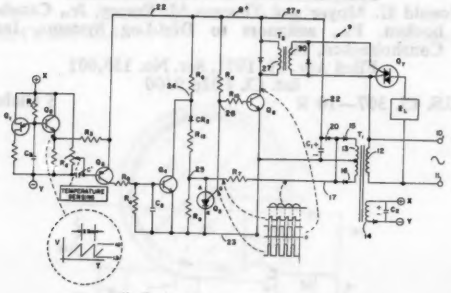


Compositions useful in the treatment of fish diseases resulting from pathogenic organisms comprising a pharmaceutical carrier and a 1-substituted, 4-dihydro-7-[2-(5-nitro-2-furyl)-vinyl)]-4-oxo-1,8-naphthyridine, the 3-carboxy or methoxycarbonyl derivatives thereof or the alkali metal salts of the 3-carboxy-substituted derivative and a method of treating said fish diseases.

3,705,990
THYRISTOR FIRING CONTROL CIRCUIT

John Pilęckis, Shaumburg, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed July 21, 1971, Ser. No. 164,720
Int. Cl. H03k *17/56*
U.S. Cl. 307—252 B 5 Claims

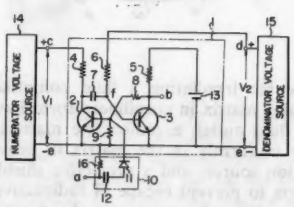


A burst firing type of solid state modulating condition control system operating a solid state power handling semiconductor means. A programmable unijunction transistor is utilized to provide a modified zero crossover firing circuit with an extended triggering pulse to the Triac when using inductive loads or in three phase control circuits where control circuit voltage and load circuit current are not in phase.

3,705,991
DIVIDING CIRCUIT USING MONOSTABLE MULTIVIBRATOR

Nobuhito Hobo, Inuyama, Japan, assignor to Nippondenso Kabushiki Kaisha, Aichi-ken, Japan

Filed Oct. 27, 1970, Ser. No. 84,370
Claims priority, application Japan, Dec. 8, 1969, 44/98,537
Int. Cl. H03k *3/10*; G06g *7/16*
U.S. Cl. 307—273 3 Claims

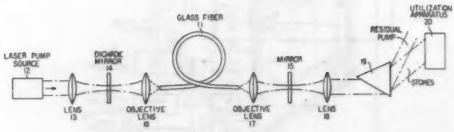


A dividing circuit comprising a monostable multivibrator with an RC type time-constant-determining circuitry, and a constant D.C. voltage source and two variable D.C. voltage sources. In a stable state, the time-constant-determining capacitance is charged from a first variable D.C. voltage source corresponding to a numerator, and in unstable state it discharges through a loop including a second variable D.C. voltage source corresponding to a denominator.

3,705,992
BROADBAND TUNABLE RAMAN-EFFECT DEVICES IN OPTICAL FIBERS

Erich Peter Ippen, Middletown, Chandra Kumar Naranbhai Patel, Summit, and Rogers Hall Stolen, Middletown, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Dec. 13, 1971, Ser. No. 207,030
Int. Cl. H03f *7/00*
U.S. Cl. 307—88.3 7 Claims



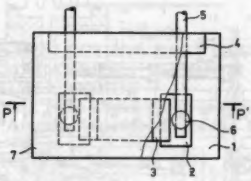
Stimulated Raman emission in the visible has been observed in glass-fiber optical waveguides. Even though the Raman cross section is quite small, relatively low threshold for Raman emission can be achieved because high optical power densities are maintained over long lengths of waveguide. The broad stimulated gain bandwidths available in glass should permit the construction of wideband fiber amplifiers and Raman oscillators tunable over a range of about 100 angstroms.

3,705,993

PIEZORESISTIVE TRANSDUCERS AND DEVICES WITH SEMICONDUCTING FILMS AND THEIR MANUFACTURING PROCESS

Radu G. Grigorovici and Andrei Gavrila Devenyi, Bucharest, Valer Florea, Medias-Aleea, and Gheorghe Korony, Aretia Belu, and Carol Costachescu, Bucharest, Rumania, assignors to Institutul de Fizica, Bucharest, Rumania

Filed July 14, 1971, Ser. No. 162,525
Claims priority, application Rumania, July 16, 1970, 63,946
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.1 6 Claims



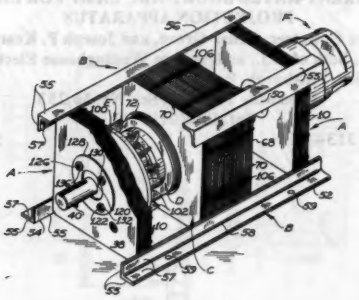
A method of making a piezoresistive device in which a mica, synthetic resin or metallic substrate (the latter coated with a layer of insulating enamel) is coated with strips of colloidal-silver paste, is fired to fuse the resulting conductive strips to the substrate, is provided with a layer of vapor-depositing germanium bridging the strips, is formed with wire terminals and is thereafter coated with a lacquer.

3,705,994

ELECTRICAL MACHINE FRAME

Gordon J. Berry, Jr., Novelty, Ohio, assignor to Portec Inc., Cleveland, Ohio

Filed Feb. 18, 1971, Ser. No. 116,403
Int. Cl. H02k *5/00*
U.S. Cl. 310—91 14 Claims



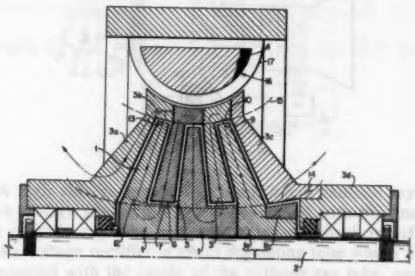
A frame for large electrical machines comprised of a rotor and a stator and means for mounting the rotor relative to the stator. The mounting means or frame is comprised of two spaced apart end bracket plates and longitudinally extending angle iron connecting members. The end bracket plates are each fabricated from a plurality of laminations stamped from relatively thin metal to the desired ultimate dimensions and with the necessary openings therethrough. The laminations are placed in a side by side relationship and welded together to form an integral unit. The component parts are all assembled in their final operative position and angle iron connecting members are welded to the end bracket plates and the stator so as to rigidly hold the parts in the assembled position.

3,705,995

HOMOPOLAR MACHINE WITH MULTIPLE DISCS AND A SHORT INDUCTOR

Jean-Pierre Chabrerie, 55–1–08 Rue Saint Saens, Saint-Michel-S/Orge, France, and Alain Jacques Mailfert, 5 Av a Fraule, Aulnay-Sous-Bois, France

Filed Nov. 29, 1971, Ser. No. 202,757
Claims priority, application France, Nov. 30, 1970, 7042947
Int. Cl. H02k *31/04*
U.S. Cl. 310—178 3 Claims



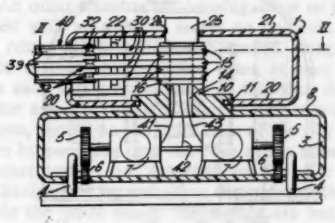
Homopolar machines with multiple discs and a short inductor. The homopolar machine has in combination with the short inductor discs and counter discs which decrease in thickness from the center toward the periphery thereof, the thickness at the periphery being equal to the thickness at the center reduced in inverse proportion to the corresponding radius therebetween. The inductor is preferably of the superconductor type, and its inner surface is at least in part of a toroidal configuration. The sliding contacts are preferably made by filling the machine with a liquid metal, and one or more of the contact surfaces may be truncated to facilitate assembly of the machine.

3,705,996

SLIP RING ASSEMBLY

Kamal Ahmed, Stanmore, England, assignor to AMP Incorporated, Harrisburg, Pa.

Original application Aug. 25, 1969, Ser. No. 852,702, now Patent No. 3,574,266. Divided and this application Jan. 8, 1971, Ser. No. 104,943
Int. Cl. H01r *39/08*
U.S. Cl. 310—232 3 Claims

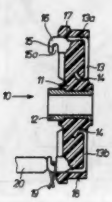


A carriage having a pair of driven wheels, each wheel of the pair being driven by a separate electric motor to permit differential steering of the carriage. A slip ring assembly is provided on the carriage and forms a part of a feed path for supplying power to the electric motors. The carriage can be arranged immediately below a board on which a toy vehicle stands and can be indirectly coupled to the toy vehicle by a permanent magnet.

3,705,997
COMMUTATOR

Oskar Bauerle, Senftertalweg 15, Buhl, Germany; Wilfried Kubel, Im Kossler, Altschweier, Germany; Ernst Munster, Oberhof 9, Vimbuch, Germany; and Karl Schweikert, Obervogt-Haefelin Str. 41b; and Georg Strobl, Obervogt-Haefelin Str. 41a, both of Buhl, Germany

Filed July 9, 1971, Ser. No. 161,231
Claims priority, application Germany, July 11, 1970, P 20 34 502.2
Int. Cl. H02k 13/04
U.S. Cl. 310—237 7 Claims

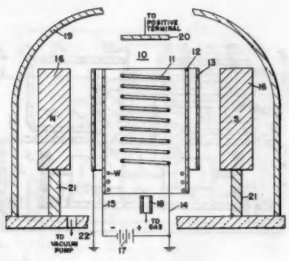


A hub of electrically insulating material carries a plurality of elongated electrically conductive lamellas. Each of the lamellas has an exposed contact face, a first end portion embedded in the material of the hub, an intermediate portion also embedded and a second end portion which projects from the hub and is of hook-shaped configuration with its general plane including an angle of substantially 90° with the general plane of the exposed contact face.

3,705,998
NEGATIVE ION GENERATOR

Thomas A. Jennings, Glenside, and William McNeill, Southampton, Pa., assignors to the United States of America as represented by the Secretary of the Army

Continuation-in-part of abandoned application Ser. No. 37,360, May 5, 1970, which is a continuation of abandoned application Ser. No. 704,463, Feb. 9, 1968. This application Jan. 27, 1972, Ser. No. 221,250
Int. Cl. H01j 33/00, 37/08
U.S. Cl. 313—161 6 Claims

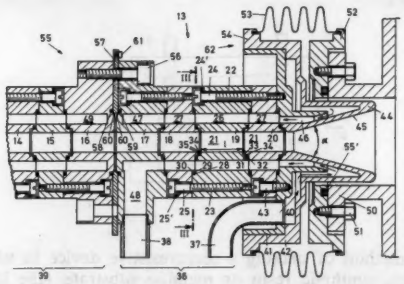


Negative ion generator for controllably and selectively generating negative ions by superposing non-uniform electric and magnetic fields, and comprising means for generating an electrostatic field within a metallic cylinder and a magnet associated therewith for producing the magnetic field, and generating the negative ions when a supply of gas is fed into the generator.

3,705,999
GAS DISCHARGE TUBE FOR A LASER

Karlheinz Victor Hermann Banse, Flamatt, Wolfgang Hagen Seelig and Jurg Hugo Steinger, Bern, and Gerd Bernd Herziger, Gumligen, Switzerland, assignors to Institut fur Angewandte Physik der Universitat Bern, Bern, Switzerland

Filed Apr. 9, 1971, Ser. No. 132,717
Claims priority, application Switzerland, Apr. 13, 1970, 5,451/70
Int. Cl. H01j 7/18
U.S. Cl. 313—197 12 Claims

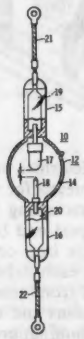


A vacuum gas discharge tube of a laser assembly comprises a plurality of interconnected discs which are provided with aligned central bores to define a discharge column. Each disc has an anodic oxidation layer on its surface to electrically insulate it from the other discs and protect it against ion bombardment and ultra-violet rays from the discharge column. The discs are sealed by annular sealing rings seated in recesses in the discs and the rings are protected by shoulders which project beyond the rings to cover the same and protect them against the ion bombardment and ultra-violet rays.

3,706,000
CURRENT-RATED SHORT-ARC LAMP FOR LIGHT PROJECTION APPARATUS

Theodore C. Retzer, Cedar Grove, and Joseph P. Kearney, Teaneck, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 11, 1970, Ser. No. 36,253
Int. Cl. H01j 17/20
U.S. Cl. 313—214 5 Claims



A direct-current short-arc xenon lamp is mounted in prefocused relationship with either a parabolic or an ellipsoidal reflector so that the optical axis of the reflector is aligned with the longitudinal axis of the lamp. The spacing

between the lamp electrodes is smaller than that used heretofore and the focal point of the reflector is located at a predetermined position along the arc path. The lamp is rated and operated at a predetermined current within a range of from 70 to 200 amperes and the electrodes are spaced from 4.6 to 7.0 millimeters apart, depending upon the particular operating-current rating of the lamp. When the lamp is operated in a horizontal position, a magnet located adjacent the lamp and outside of the reflector is used to prevent upward bowing of the arc. In the case of a movie projection system, the shorter and more intense arc increases the screen lumens and decreases the power (watts) consumed by the lamp.

3,706,001

THERMIONIC ELECTRON EMITTER CONTAINING THORIUM CARBIDE, THORIUM OXIDE AND ZIRCONIUM CARBIDE

Thomas J. Nall, Fern Creek, Ky., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,608
Int. Cl. H01j *1/05, 1/14, 1/38, 19/06*
U.S. Cl. 313—346 DC **2 Claims**

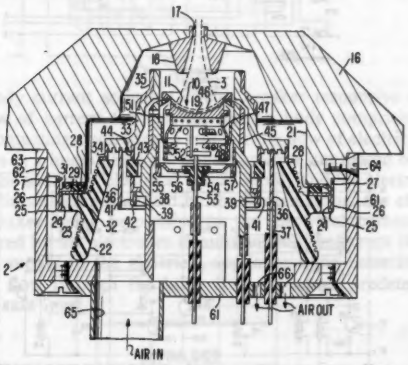
An improved thermionic electron emitter is provided containing thorium carbide, thorium oxide and zirconium carbide.

3,706,002

ELECTRON GUN

George V. Miram, Daly City, and Gerhard B. Kuehne, Santa Clara, Calif., assignors to Varian Associates, Palo Alto, Calif.

Continuation-in-part of application Ser. No. 50,685, June 29, 1970. This application Nov. 16, 1970, Ser. No. 89,972
Int. Cl. H01j *25/10*
U.S. Cl. 315—5.39 **14 Claims**



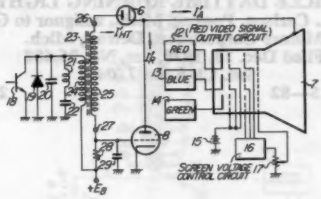
A high power microwave beam tube is disclosed employing an improved electron gun. The electron gun includes an outwardly flared high voltage electrical insulator for insulating the anode relative to the cathode. The outwardly flared insulator includes an external shoulder portion encircling the flared member, such shoulder being disposed intermediate the length of the flared member and being joined to a portion of the envelope of the gun to be operated at a potential positive with respect to the cathode potential. A fluid enclosure encloses the wide end of the flared insulator for containing a fluid coolant in heat exchanging relation with portions of the vacuum envelope of the gun for cooling the gun in use.

3,706,003

HIGH VOLTAGE REGULATING CIRCUIT

Mitsuharu Akatsu; Tomoo Kinoshita, both of Yokohama, and Tadahiko Iwasaki, Kamakura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 27, 1970, Ser. No. 40,857
Claims priority, application Japan, May 30, 1969, 44/41679
Int. Cl. H01j *29/70*
U.S. Cl. 315—18 **6 Claims**



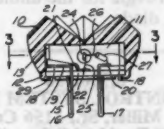
A high voltage regulating circuit has a cathode ray tube, high voltage generating means connected with the anode of the cathode ray tube and comprising a flyback transformer and a voltage rectifier, a shunt regulating tube whose plate is connected with the anode of the cathode ray tube, and high voltage current responsive means. The high voltage current responsive means is connected with the high voltage generating means for generating a control signal proportional to the high voltage current flowing through the high voltage generating means. The control signal is supplied to the grid of the shunt regulating tube to control the plate current thereof, so that the anode voltage of the cathode ray tube is kept constant.

3,706,004

COMBINATION LIGHT AND SWITCH

Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.

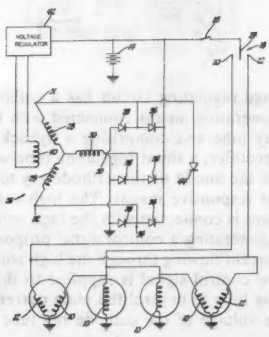
Filed Aug. 2, 1971, Ser. No. 168,190
Int. Cl. H01j
U.S. Cl. 315—71 **10 Claims**



A combination light and switch suitable for a night light. An outer transluscent housing, clear or in colors, is provided with an annular recess on one side. The walls of the recess are provided with spaced, integral, vertical ribs. On diametrically opposed sides, at least two of the ribs on each side are shortened so that they do not reach the outer edge. A circular dielectric disc is mounted over the recess, resting on the outer ends of the ribs and locked in place by swedging over the edge of the housing. A pair of contact prongs are mounted on the disc with each prong having one leg extending through the disc and bent over. At the point where the prongs are bent over, the disc is provided with a thicker portion forming a rib across the diameter of the disc. Mounted on this side of the disc is a conventional neon lamp, resistance, and wiring so that they are hooked electrically to one of the prong legs. The other end of the lamp circuit is tied to a pivoted member which is designed to slide over and away from the turned over end of the other prong. This forms a switch for opening and closing the circuit to the lamp. With the parts assembled, the rib on the disc extends over the shorter ribs of the housing and can turn in both direc-

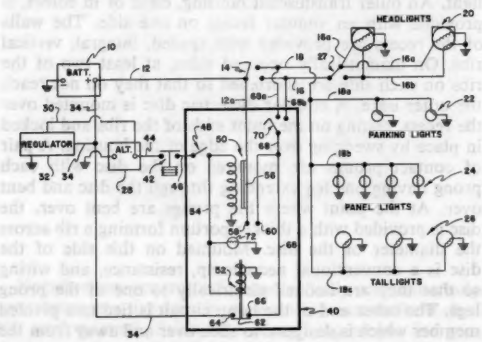
tions until the longer ribs are reached. The switch member extends between two of the ribs and is confined between them. Thus, when the prongs are pushed into a wall receptacle, turning movement of the housing will actually turn the bent over portion of the prong away from the switch member, which cannot turn because of the ribs. Reverse movement puts the switch on by contacting the parts.

3,706,005
VEHICLE DAYTIME RUNNING LIGHTS
Richard A. Carlson, Pontiac, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 10, 1970, Ser. No. 96,688
Int. Cl. B60q *1/04*
U.S. Cl. 315—82 **2 Claims**



A dual intensity lighting circuit in which the low beam filaments of the vehicle headlamps are energized to produce less light output when the vehicle engine is running, and the low beam filaments are not energized through the conventional headlight lighting system, than when they are energized through the conventional lighting system. The output from one of the output terminals of a three phase alternating current generator is supplied to the low beam filaments to provide for the diminished illumination through a blocking diode.

3,706,006
HEADLIGHT CONTROL SYSTEM FOR VEHICLES
Richard C. Miller, Sr., 1156 Crahen NE., Grand Rapids, Mich. 49501
Filed Apr. 1, 1971, Ser. No. 130,164
Int. Cl. B60q *1/02*
U.S. Cl. 315—83 **8 Claims**

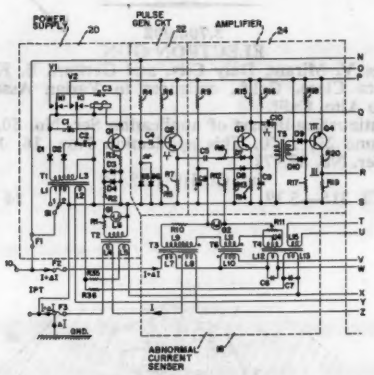


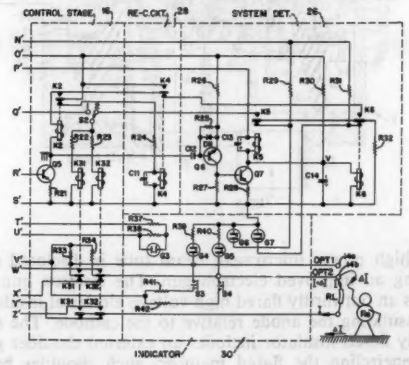
A lighting control device for vehicles which can be installed for automatically turning on the lights of the vehicle whenever the vehicle is operated either by day or night for safety purposes. The device includes sensors connected to the alternator or generator of the vehicle and operating through a series of relays to provide power to the vehicle light system regardless of the position of the manually operated lighting switch. Override or defeat switches are also provided wherein the device may be disconnected, and the lighting system will operate in a conventional manner. The device may also function automatically to turn off the lights a predetermined time after the vehicle has been stopped.

ERRATUM

For Class 317—58 see:
Patent No. 3,706,100

3,706,007
OVERLOAD AND SHOCK PROTECTIVE DEVICE
Yung-Chun Wu, 9–1, Alley 7, Yang Ming Li, Yang Ming Shan, Taipei, China
Filed Mar. 23, 1971, Ser. No. 127,320
Int. Cl. H02h *3/28*
U.S. Cl. 317—18 D **13 Claims**





Disclosed herein is a protective circuit for disconnecting a load from a voltage source in response to the detection of an electrical overload or an excess of leakage current. The protective device, which is coupled in series with the

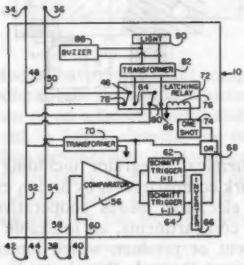
voltage source and load, includes a power supply for converting the source voltage into a potential for use by the protective device; a pluse generator for use in detecting malfunctions in the protective circuit; a current sensor for producing an output signal under conditions of abnormal current flow; an amplifier for amplifying the output signals of the pulse generator and the current sensor; a control stage for opening and closing a current path from the potential source to the load in response to an output signal from the amplifier; a reset circuit for automatically resetting the control stage when a previously detected malfunction has been remedied; a system detector for monitoring the operation of the previously mentioned devices, and for detecting failures thereof by monitoring the amplified pulses, for actuating the control stage; and an indicator responsive to the control stage, the current sensor and the detector for indicating the presence of a malfunction, and the nature of such malfunction.

3,706,008

BODY CURRENT ACTIVATED CIRCUIT BREAKER

Frederic B. Kremer, 1600 Garrett Road, Apt. B–204, Upper Darby, Pa. 19082

Filed Feb. 3, 1972, Ser. No. 223,096
Int. Cl. H02h *3/16*
U.S. Cl. 317—18 A **7 Claims**



A body current activated circuit breaker responsive to the flow of current through the human body comprising body contacting electrodes to monitor the flow of electrical currents in a human being, a circuit breaker interposed between the source of electrical power supply and the electrical appliance being operated by the human being, the circuit breaker being responsive to the electrical currents monitored by the electrodes to automatically interrupt the current supply to the electrical appliance upon detecting current flow through the body that exceeds a predetermined, safe level.

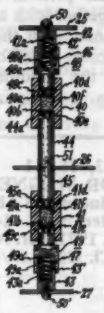
3,706,009

LIGHTNING ARRESTER CAPACITIVE GRADING CIRCUIT MOUNTING MEANS

Roderick Reitz, Lanesboro, Mass., assignor to General Electric Company

Filed Dec. 22, 1971, Ser. No. 210,769
Int. Cl. H02h *9/06*
U.S. Cl. 317—68 **8 Claims**

A surge voltage arrester, such as a lightning arrester, is provided with a spring-loaded mounting means for releasably supporting a plurality of capacitors in a series circuit arrangement in which they act as a voltage grading circuit for the sparkgap assemblies of the arrester. The mounting means includes a plurality of slidably engageable terminal and contact members that are shaped to cooperate with recessed terminals in the grading capacitors to form a relatively rigid mounting column that is effective to support the capacitors in a predetermined position adjacent the sparkgap assemblies of the arrester. The mounting means are further operable to permit removal of one or more of the capacitors from the series-connected column without requiring disassembly of the entire column.

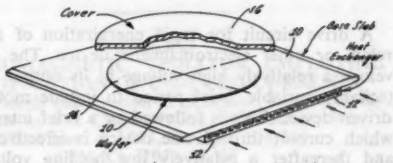


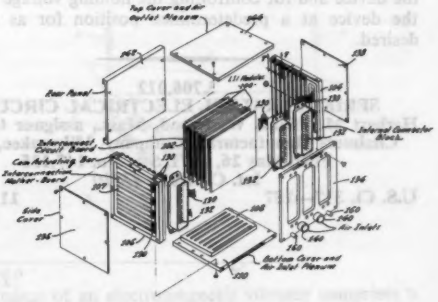
3,706,010

PACKAGING STRUCTURE HAVING COOLING MEANS FOR A MULTIPLICITY OF HERMETIC MODULES FOR INTEGRATED CIRCUIT CHIPS

Lothar Laermer, Paramus, and Robert J. Schenk, Pompton Plains, N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Aug. 20, 1971, Ser. No. 173,367
Int. Cl. H05k *7/20*
U.S. Cl. 317—100 **5 Claims**

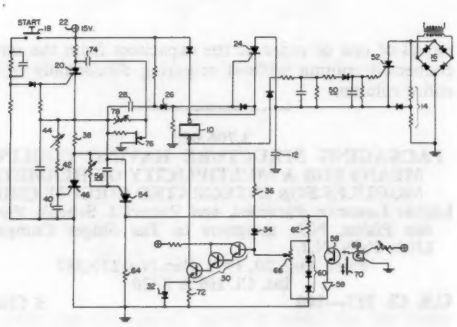




An improved hermetically sealed module is provided for packaging Large Scale Integrated Circuit (LSI) chips for computers, and the like; and an improved higher level packaging structure is provided for a multiplicity of such modules. The individual modules incorporate a heat exchanger by which cooling air is brought within the proximity of the heat dissipating semiconductor element in the module while still maintaining the integrity of the hermetically sealed enclosure, and an improved electrical terminal assembly is provided for connecting the semiconductor

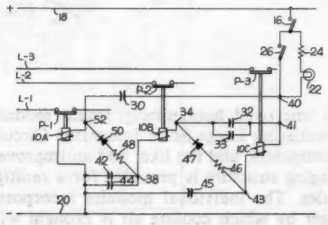
element within the module to outside circuitry. The higher level packaging structure consists of two contact block assemblies to which motherboards, a front panel, a rear panel, a bottom inlet air plenum and a top outlet air plenum are mounted, together with a contact assembly for engagement with the contacts on the individual modules. The contacts of the contact assembly are cam operated into engagement with the module contacts after the module is inserted so as to minimize the insertion force requirements.

3,706,011
TIMER CIRCUIT FOR MAGNETIC ACTUATORS
Andrew W. Vincent, 65 Aberdeen St., Rochester, N.Y. 14611
Filed May 14, 1971, Ser. No. 143,386
Int. Cl. H01h *47/04*
U.S. Cl. 317—151 **2 Claims**



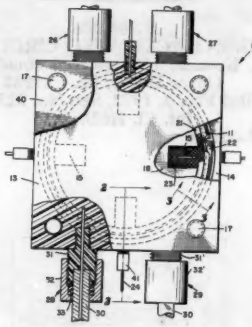
A drive circuit for rapid energization of a solenoid, relay, or other electromagnetic device. The circuit develops a relatively high voltage at its output for a controllably variable, brief period to initiate motion of the driven device. This is followed by a brief interval during which current through the device is effectively cut off, and thereafter a relatively low holding voltage is developed to maintain the device partly or fully energized. Servo means are provided for sensing the advance of the device and for controlling the holding voltage to keep the device at a predetermined position for as long as desired.

3,706,012
SERIES-PARALLEL ELECTRICAL CIRCUIT
Herbert M. Pflanz, Westwood, Mass., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed May 26, 1971, Ser. No. 147,135
Int. Cl. H01h *47/10*
U.S. Cl. 317—157 **11 Claims**



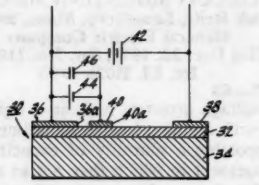
An improved direct current electrical circuit in which any number of electrical devices may be energized in parallel with each other to momentarily provide a higher state of energization of the devices, or in which the devices may be energized in series with each other to provide a lower state of energization of the devices, with the circuit automatically reverting from the parallel energization state to the series energization state.

3,706,013
ION EXCHANGE MEMBRANE ELECTRO-CHEMICAL INTEGRATOR
Pierre Louis Bourgault, Don Mills, Ontario, and George Herbert Fraser, Weston, Ontario, Canada, assignors to Johnson Matthey & Mallory Limited, Toronto, Ontario, Canada
Continuation of abandoned application Ser. No. 731,556, May 23, 1968. This application Dec. 24, 1970, Ser. No. 101,409
Int. Cl. H01g *9/00*
U.S. Cl. 317—231 **11 Claims**



An electrochemical integrator including a work area divided into work compartments by an ion exchange membrane means, electrode means cooperatively associated with the work compartments, an ionizable material such as a gas, reagent or product, which ionizes due to the passage of current through the electrode means in the work compartments, and a measuring means which displays the quantity of gas, reagent or product transferred through the ion exchange membrane means. The quantity of ionizable material transferred between the work compartments is proportional to the electrical charge passed through the electrode means.

3,706,014
SEMICONDUCTOR DEVICE
Raymond Harkless Dean, Lawrenceville, N.J., assignor to RCA Corporation
Filed Sept. 11, 1970, Ser. No. 71,456
Int. Cl. H01l *17/00*
U.S. Cl. 317—234 R **8 Claims**



Spaced cathode and anode contacts engage a semiconductor layer with at least the cathode contact forming an injecting junction with the semiconductor layer. A

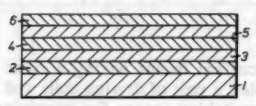
third contact between the cathode and anode contacts and adjacent the cathode contact forms a blocking junction with the semiconductor layer and is electrically connected to the cathode contact. A voltage applied between the cathode and anode contacts creates an electrical field along the surface of the semiconductor layer with the profile of the electrical field being adjusted by the voltage applied to the third contact. The profile of the electrical field can be varied by changing the distance between the anode facing end of the third contact and the anode facing end of the cathode contact and/or by changing the voltage applied to the third contact with respect to the voltage applied to the cathode contact.

3,706,015

SEMICONDUCTOR WITH MULTILAYER CONTACT

Rigobert Schimmer and Horst Gesing, Belecke, and Karl-Heinz Cordes, Warstein, Germany, assignors to Licentia Patent Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Mar. 2, 1971, Ser. No. 120,220
Claims priority, application Germany, Mar. 3, 1970, P 20 09 863.9
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **10 Claims**



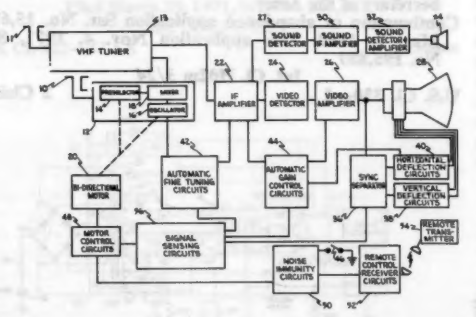
A semiconductor having a contact composed of a layer located immediately on the semiconductor and made of the combination of an adherent metal and a low contact-resistance metal, a layer situated on the combination layer and being substantially solder-insoluble and wettable, a second wettable layer situated on the solder-insoluble and wettable layer, and at least one etchant-resistant layer situated on the second wettable layer.

3,706,016

MOTOR CONTROL CIRCUIT

Thomas Austin Bridgewater, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 829,394, June 2, 1969, abandoned. This application Jan. 6, 1971, Ser. No. 104,473
Int. Cl. H02p *5/00*
U.S. Cl. 318—16 **20 Claims**



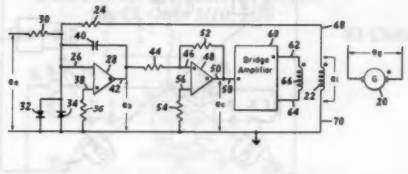
A motor control circuit includes a pair of transistors. Circuit means are provided for connecting a source of potential and a motor winding in series between the collector electrodes of the transistors. Control means are coupled between the base and emitter electrodes of the collector-emitter electrode current path of the devices and, hence, the energization of the motor winding.

3,706,017

MOTOR SPEED CONTROL

John A. Gingrich, Toronto, Ontario, Canada, assignor to Dover Corporation (Canada) Limited, Toronto, Ontario, Canada

Filed July 15, 1970, Ser. No. 54,895
Int. Cl. H02p *7/34*
U.S. Cl. 318—146 **18 Claims**



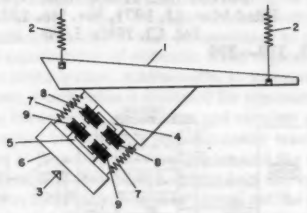
A system for accurately controlling the speed of a D.C. motor which is powered by the generator of a motor-generator set. The flux in the generator is controlled by a generator field supplied by a switching bridge amplifier. The voltage induced in an extra generator field is integrated to obtain a measurement of the change of the flux in the generator and this measurement is used to control the switching of the bridge amplifier. The control is effected in such a way that the rate of change of flux in the generator is made proportional to the error between the pattern speed and the measured speed of the D.C. motor.

3,706,018

ELECTROMAGNETIC VIBRATOR EMPLOYING RECTIFICATION OF INDUCED CURRENTS

John M. Morris and Preston H. Schrader, Louisville, Ky., assignors to Rex Chainbelt Inc., Milwaukee, Wis.

Filed Nov. 4, 1971, Ser. No. 195,746
Int. Cl. H02k *33/08*
U.S. Cl. 318—125 **4 Claims**



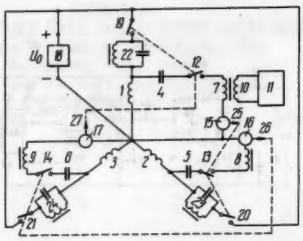
The motor of an electromagnetic vibrator comprises a ferromagnetic core arranged with windings energized with alternating current and direct current, in which the direct current excitation preferably exceeds the alternating current excitation. The direct current for a winding may be supplied from the power line through rectifiers or may be induced in the winding, closed by a unilateral conductor, by transformer action from another winding energized with alternating current. Since the force of an electromagnet varies as the square of the flux across the air gap, the presence of the direct current field increases the effectiveness of the alternating current in driving the vibrator.

3,706,019

DEVICE FOR MEASURING ANGULAR POSITION OF THE ROTOR OF A SYNCHRONOUS ELECTRIC MOTOR AND A THYRATRON ELECTRIC MOTOR

Vladimir Grigorievich Eremenko, Moscow, U.S.S.R., assignor to Moskovsky Ordena Lenina Energeticheskiy Institut, Moscow, U.S.S.R.

Filed Mar. 11, 1970, Ser. No. 18,595
Int. Cl. H02k 29/00
U.S. Cl. 318—138 3 Claims



A device for measuring angular position of the rotor of a synchronous electric motor by virtue of variation of the value of the high-frequency current envelope, said current flowing through at least one phase winding of the motor that is connected to a high-frequency power supply source, wherein inserted into the electrical circuit formed by a motor phase winding and the high-frequency power supply source, is a low-frequency guard filter, whereas inserted into the electrical circuit formed by the motor phase winding and low-frequency power supply source, is a high-frequency guard filter.

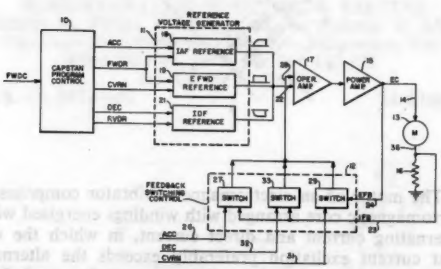
A thyratron electric motor employs the contemplated device for measuring angular position of the rotor whose change over switch provides alternative connection of the motor phase winding to the high-frequency power supply source, is synchronized with the ring-type power switching arrangement of the motor.

3,706,020

CAPSTAN MOTOR CONTROL SYSTEM

Daniel M. Klang, Huntington Station, N.Y., assignor to Bucode Inc., Hauppauge, N.Y.

Filed Mar. 12, 1971, Ser. No. 123,765
Int. Cl. H02r 5/06
U.S. Cl. 318—270 6 Claims



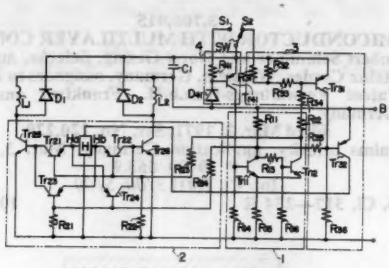
A capstan motor control system for use in magnetic tape transports, which provides for a pre-shaped current to be applied to the motor for predetermined time intervals during starting and stopping. Under current control in the starting interval, the motor accelerates to approximately 80% of its running speed. A substantially constant voltage is then applied under which the motor asymptotically accelerates to its running speed. The pre-shaped current in the stopping interval is of opposite polarity to slow the motor speed. The motor is subsequently dynamically braked to rest.

3,706,021

DIRECT CURRENT MOTOR WITH ELECTRICAL BRAKING DEVICE

Kiyoshi Yanagida, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sept. 17, 1970, Ser. No. 73,168
Claims priority, application Japan, Sept. 17, 1969, 44/73,755
Int. Cl. H02p 5/16
U.S. Cl. 318—302 2 Claims



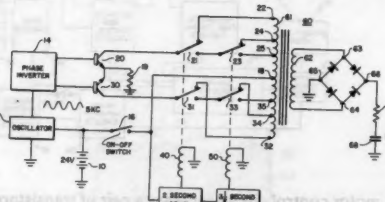
A direct current motor having a rotor with a pair of magnetic poles, a pair of driving coils and a power source and power switching means for supplying current alternatively to the driving coils, is provided with an electrical braking device. This braking device detects an induced voltage generated in the driving coils due to the magnetic poles. When speed change-over means are switched from a fast speed mode to a slow speed mode, that is, if the detected voltage is larger than the predetermined value, the revolution rate of the rotor is higher than a predetermined slow speed rate, the direction of the output current of the power switching means changes, subjecting the rotor to a braking force. The motor is thereby rapidly switched to a slow speed through a purely electrical braking force generated by the driving coils.

3,706,022

HIGH EFFICIENCY CAPACITOR CHARGING CIRCUIT

Earl E. Corey, Waltham, Richard A. Tuft, Chelmsford, and Jason H. Woodward, Lexington, Mass., assignors to the United States of America as represented by the Secretary of the Army

Continuation of abandoned application Ser. No. 15,655, Mar. 2, 1970. This application Nov. 4, 1971, Ser. No. 195,887
Int. Cl. H02m 3/24
U.S. Cl. 320—1 2 Claims



This disclosure relates to charging circuits and, particularly, to circuits for converting D-C voltage from a

low level to a high level for capacitor charging. More particularly this disclosure describes a circuit for converting a low-level, D-C voltage to a high-level, D-C, capacitor-charging voltage in a series of steps of increasing voltage to maintain a relatively-high rate of charge and efficiency during the entire charging time from zero voltage to the full voltage.

3,706,023

HIGH VOLTAGE REGULATION CIRCUIT FOR TELEVISION RECEIVER

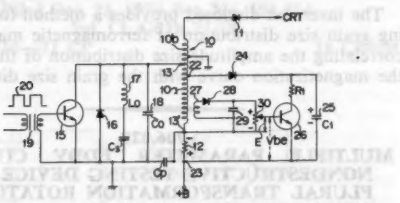
Hisashi Yamada, Yokohama; Hisao Tajiri, Kanagawa, and Mitsugu Nishizawa, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Oct. 1, 1970, Ser. No. 77,190

Claims priority, application Japan, Oct. 3, 1969, 44/78876; Jan. 26, 1970, 45/6542; Jan. 22, 1970, 45/6141

Int. Cl. H02m *3/22*

U.S. Cl. 321—2 **4 Claims**



A high voltage regulation circuit in a high voltage power supply circuit for a television receiver in which a transistorized horizontal deflection circuit is connected to the primary winding of a flyback transformer is disclosed, said regulation circuit comprising a diode and a capacitor connected to the primary winding, and means for controlling the amount of discharge from said capacitor depending upon the current load change in the high voltage power supply circuit mainly during a tract period, whereby the variation of high voltage due to the load variation in the high voltage power supply circuit is prevented and stabilized high voltage is produced.

3,706,024

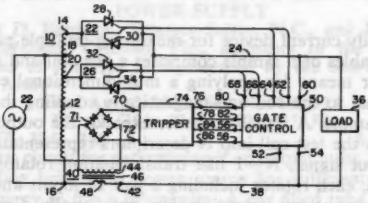
TAP CHANGING APPARATUS HAVING A GATE CONTROL TRIPPER

Peter Wood, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 29, 1971, Ser. No. 128,662

Int. Cl. G05f *1/20*

U.S. Cl. 323—43.5 S **4 Claims**



Tap changing apparatus including a transformer having a tapped winding, solid state switching elements connected between the winding and a load, and a control circuit which provides the proper gate drive to the switching elements for changing taps. The control circuit senses the voltage and current characteristics of the system to determine at what instant it will gate the switching elements in making a tap change. A tripper circuit senses the system current and trips the control circuit so that a tap change cannot be made when the system current is too low to have its characteristics detected.

3,706,025

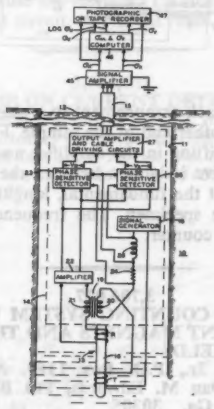
INDUCTION LOGGING METHODS AND APPARATUS USING MORE THAN ONE PHASE COMPONENT OF THE RECEIVED SIGNAL

Charles Y. Regat, Redding, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,239

Int. Cl. G01v *3/10, 3/18*

U.S. Cl. 324—6 **51 Claims**



In accordance with an illustrative embodiment of the present invention, methods and apparatus are disclosed for measuring the average conductivity and heterogeneity of formations surrounding a borehole. To accomplish this, certain phase components of the electrical signal produced by an induction logging tool are measured and combined in accordance with given mathematical relationships to produce indications of the average conductivity and heterogeneity of a formation. Moreover, the average conductivity and heterogeneity indications can in turn be combined to give indications of the conductivity of different radial regions of the formation under investigation. Additionally, to measure these phase components, a technique is disclosed for eliminating the mutual coupling between the transmitter and receiver coils of an induction logging tool. In this technique, the transmitter coil(s) is excited at two different frequencies and the mutual coupling component of the voltage induced in the receiver coil(s) at the lower frequency is used to cancel out the mutual coupling component at the higher frequency. The phase components used for computational purposes are then measured at the higher frequency.

3,706,026

APPARATUS FOR DETERMINING RESONANT FREQUENCIES OF A SPECIMEN OF MAGNETOSTRICTIVE MATERIAL

Thomas E. Johnson, Jr., Plum Borough, and Peter R. Mould, Franklin Township, Westmoreland County, Pa., assignors to United States Steel Corporation

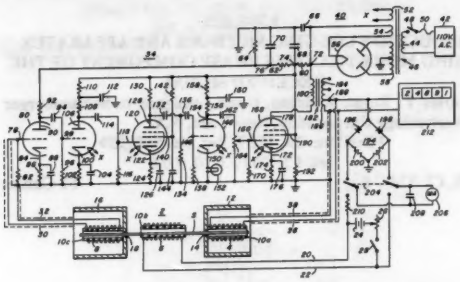
Filed Nov. 16, 1970, Ser. No. 89,685

Int. Cl. G01r *33/18*

U.S. Cl. 324—34 MA **3 Claims**

An apparatus for the accurate determination of the resonant frequency of a carbon sheet steel specimen has

a measuring head of three axially aligned encircling coils surrounding the specimen. The specimen midpoint resting on the center biasing encircling coil provides the sole support of the specimen. A shielded pickup coil surrounding one end of the specimen is connected to the input of a high gain amplifier, and the amplifier output is con-



nected in a feedback arrangement to a shielded drive coil surrounding the other end of the sample. Frequency filtering and phase shifting in the amplifier assures oscillation by magnetostrictive induction between the drive coil and the pickup coil at the fundamental, longitudinal resonant frequency of the specimen. The frequency is measured by an electronic counter.

3,706,027

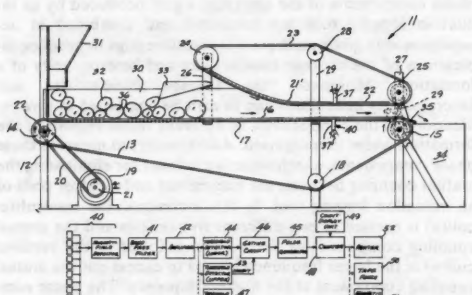
MATERIALS COUNTING SYSTEM UTILIZING PERMANENT MAGNETS AND THEIR ASSOCIATED FIELDS

Karl R. Grice, Jr., P.O. Box 1169, Anderson, S.C. 29621, and Dan M. Edwards, 110 Blackland Road NW., Atlanta, Ga. 30305

Continuation of abandoned application Ser. No. 831,953, June 10, 1969. This application July 13, 1971, Ser. No. 162,275

Int. Cl. G01r *33/00*

U.S. Cl. 324—34 R **6 Claims**



A system for counting pieces of laundry, or the like, by attaching a permanent magnet to each piece and passing the pieces through a conveyor with a magnetic field detector mounted thereon to generate pulses corresponding to the pieces as they pass by; the pulses are counted by a counter circuit arranged to utilize the signals only if their strength exceeds a predetermined lower threshold value and do not exceed a predetermined upper limit value; in one embodiment the system is designed to utilize a signal determined by an interval of time in the vicinity of maximum detected field rather than the total signal received.

3,706,028

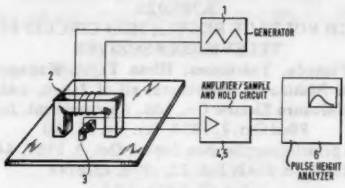
METHOD FOR DETERMINING THE GRAM SIZE DISTRIBUTION OF FERROMAGNETIC MATERIAL

Matti N. T. Otala, Tinatie 16, Oulu 25, Finland

Filed Sept. 22, 1971, Ser. No. 182,815

Int. Cl. G01r *33/12*

U.S. Cl. 324—34 R **1 Claim**



The invention disclosed provides a method for measuring grain size distribution of ferromagnetic materials by correlating the amplitude size distribution of the steps of the magnetization curve with the grain size distribution.

3,706,029

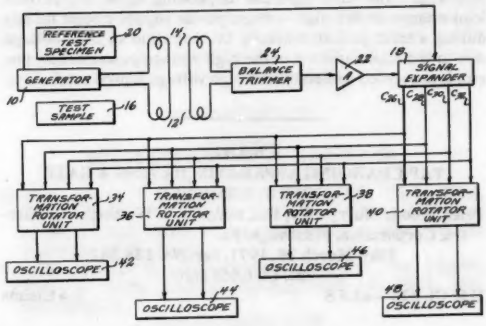
MULTIPLE PARAMETER EDDY CURRENT NONDESTRUCTIVE TESTING DEVICE USING PLURAL TRANSFORMATION ROTATORS TO RESOLVE EACH PARAMETER

Clarence R. Wandling, Kennewick, and Hugo L. Libby, Richland, Wash., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 16, 1971, Ser. No. 199,212

Int. Cl. G01r *33/12*

U.S. Cl. 324—40 **9 Claims**



An eddy current device for measuring multiple parameter variables of a sample comprises a test coil and signal generator means for applying a multidimensional excitation signal to the coil and magnetically coupling the coil to the sample. A signal expander expands the output signal from the test coil into N descriptors representative of the output signal. $N-1$ like transformation rotators are provided, each rotator including a pair of inputs and two ganged sine-cosine potentiometers rotationally displaced ninety degrees with respect to each other and connected via operational amplifiers and a summing amplifier to provide from the transformation rotator a first output $E_1=x\cos\phi-y\sin\phi$ and a second output

$$E_2=x\sin\phi+y\cos\phi$$

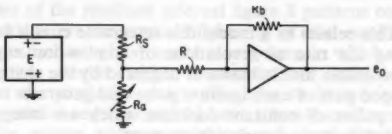
where x=an input signal applied to one of the rotator inputs, y=an input signal applied to the other of the rotator inputs, and ϕ=the variable rotational angle of the ganged potentiometer. Each input of one of the transformation rotators is connected to an associated one of the signal descriptors, the remainder of the signal descriptors each being connected to an associated one input of the remainder of the transformation rotators. The other input of each of the remainder of the transformation rotators is connected to an output of a preceding associated transformation rotator. An oscilloscope displays the first and second outputs E_1 and E_2 of the last transformation rotator to provide a display of one parameter variable of the test sample.

3,706,030

ELECTRONIC PARTICLE DETECTOR OF THE COULTER TYPE HAVING CONDUCTIVITY CHANGE INDEPENDENCE CIRCUITRY

Robert I. Klein, Hialeah, and Walter R. Hogg, Miami Lakes, Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Dec. 28, 1970, Ser. No. 101,614
Int. Cl. G01n *27/00*
U.S. Cl. 324—71 CP 16 Claims



Apparatus and circuitry for analyzing particles suspended in a fluid medium, including a first insulated vessel having a small aperture opening into a second insulated vessel, the fluid being in both vessels and caused to pass through the aperture. An excitation power supply source of A.C. or D.C. type produces an electric current between the two vessels, the electrical impedance of the suspension being different from that of the particles, so that a particle passing through the aperture changes the impedance of the aperture contents, thereby modulating the current in the aperture contents, and causing a signal which is applied to the input of a detector circuit comprising an amplifier. The impedance of the excitation power supply source, the impedance of the detector input and the impedance of the aperture contents are dimensioned and arranged in such a manner as to make the magnitudes of the signals independent of slow changes in electrical characteristics of the suspension.

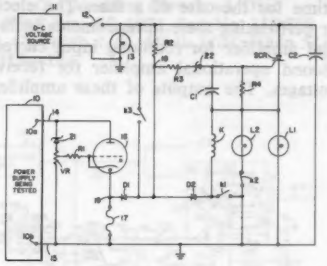
3,706,031

TEST CIRCUIT FOR EXPLODING BRIDGEWIRE POWER SUPPLY

Ernest D. Boutwell, Winston-Salem, N.C., and Jack M. Longfellow, Orlando, Fla., assignors to the United States of America as represented by the Secretary of the Army

Filed Apr. 5, 1971, Ser. No. 131,314
Int. Cl. G01r *13/36;* H01h *85/30*
U.S. Cl. 324—122 6 Claims

A test circuit for determining if an output pulse from an exploding bridgewire power source has sufficient voltage and energy to fire a bridgewire. A gas filled tube such as a cold-cathode trigger and regulating tube in series with a fusible test link simulates an exploding bridgewire with a series spark gap. If a pulse from the power source is of sufficient voltage and energy, the tube conducts, and the test link fuses. If the pulse has sufficient voltage to make the tube conduct but has insufficient energy, the test link will not fuse. Indicators are lit depending on whether the tube conducts and the test link fuses. In the event that the



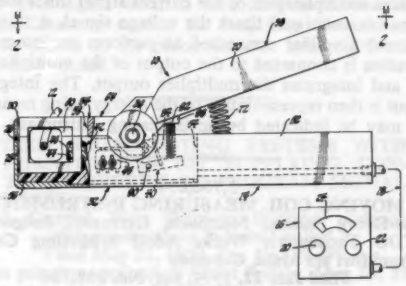
pulse does not fuse the test link, the link is automatically fused by the test circuit, to prevent reuse of the link.

3,706,032

CLAMP ON CURRENT DETECTOR

Dennis G. Vikstrom, Madison Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 16, 1970, Ser. No. 3,361
Int. Cl. G01r *1/22, 33/00*
U.S. Cl. 324—127 4 Claims



A method and apparatus for measuring DC current in a conductor by surrounding the conductor with a magnetic core having first and second core sections, the second core section being adapted for movement relative to the first core section and normally biased to a certain relative position so as to present a certain reluctance to the magnetic field produced by the current in the conductor. The second core section is moved to a predetermined cocked position then rapidly returned to the certain position so as to rapidly change the magnetic flux in the magnetic core. The magnetic flux change is sensed by a sensing coil and provides an indication of the current magnitude. A resetting coil is also provided for returning the magnetic core to a predetermined magnetic condition by generating a predetermined magnetic field in the core in the same direction as the magnetic field generated by the current in the conductor.

3,706,033

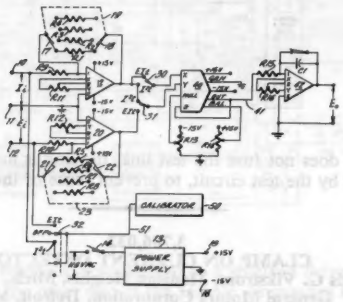
INSTRUMENT FOR MEASUREMENT OF ENERGY OF AN INTERRUPTING DEVICE

Ruben D. Garzon, Malvern, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Sept. 27, 1971, Ser. No. 184,061
Int. Cl. G01r *7/00;* H01h *71/04, 85/30*
U.S. Cl. 324—140 R 6 Claims

An instrument for measuring the energy across a circuit breaker or fuse during their interruption is indicated

by measuring and indicating the product of voltage and current, integrated over a given time for the case of a circuit breaker, and the current squared, integrated over a given time for the case of a fuse. The electronic circuitry for performing these measurements includes a first operational amplifier for receiving input current signals, and a second operational amplifier for receiving input circuit voltages. The outputs of these amplifiers is connected to a multiplier circuit through a switching circuit to cause multiplication of the current signal times itself or of the current signal times the voltage signal. A third operational amplifier connected to perform an integration operation is connected to the output of the multiplier circuit and integrates the multiplier output. The integrated output is then representative of the energy being measured and may be indicated by an indicating instrument.

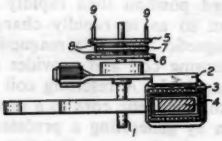


3,706,034

MOVING COIL MEASURING INSTRUMENT

Hans-Georg Sander, Steinbach, Germany, assignor to VDO Tachometer Werke Adolf Schindling GmbH, Frankfurt am Main, Germany

Filed Jan. 22, 1971, Ser. No. 108,726
Claims priority, application Germany, Jan. 23, 1970, G 70 02 264.9; Austria, Feb. 2, 1970, A 944/70; Feb. 9, 1970, A 1,158/70
Int. Cl. G01r *1/00, 1/14*
U.S. Cl. 324—154 R **13 Claims**



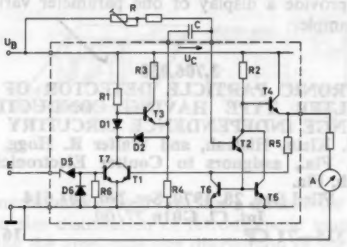
A moving coil measuring instrument, which comprises an axle having a projecting arm. A moving coil is secured to the projecting arm. An annular core is surrounded by the moving coil, and at least one spiral spring and the moving coil are adjustable against the force of the spiral spring. The spiral spring is operatively connected with the ends of the moving coil. An insulating disc is disposed adjacent the spiral spring, and a layer of soft elastic material and dampening axial oscillations of the spiral spring is applied selectively to the disc or to one side of the spiral spring.

3,706,035

INTEGRABLE REVOLUTION MEASURING CIRCUIT WITH SUPPLY VOLTAGE TRANSIENT SUPPRESSION

Wolfgang Hoehn, Freiburg, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed May 5, 1971, Ser. No. 140,390
Claims priority, application Germany, May 23, 1970, P 20 25 245.3
Int. Cl. G01r *23/02*; G01p *3/48, 3/54*
U.S. Cl. 324—169 **9 Claims**



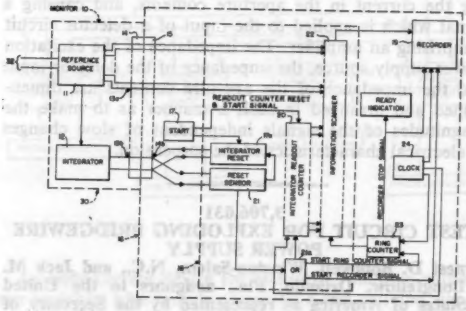
This relates to a monolithic integrable circuit for measuring the rate of revolutions of combustion engines. A monostable multivibrator is triggered by the sharp needle-shaped part of each ignition pulse and generates rectangular pulses of constant duration which are integrated by an indicating measuring instrument.

3,706,036

ELAPSED TIME COMPILING SYSTEM

Edward M. Marwell, Mount Kisco, and Eugene P. Finger, Brewster, N.Y., assignors to Curtis Instruments, Inc., Mount Kisco, N.Y.

Filed Jan. 7, 1970, Ser. No. 1,155
Int. Cl. G04f *9/00*
U.S. Cl. 324—181 **8 Claims**

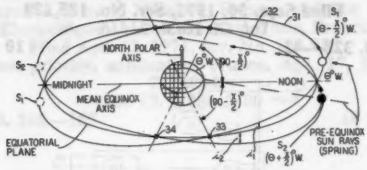


An elapsed time compiling system is described which includes elapsed time monitors, each for measuring the amount of use of an item of equipment, and a compiler for sequentially reading and storing output signals from each such monitor along with an identification signal representing the particular equipment item to which it corresponds. In a preferred embodiment, the reading of each output signal by the compiler resets the monitor to zero, thereby completely preventing error arising from reading the same monitor more than once.

3,706,037
COMMUNICATION SATELLITE SYSTEM

Carl William Lundgren, Jr., Colts Neck, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 25, 1970, Ser. No. 14,097
Int. Cl. H04b 7/14
U.S. Cl. 325—4 10 Claims

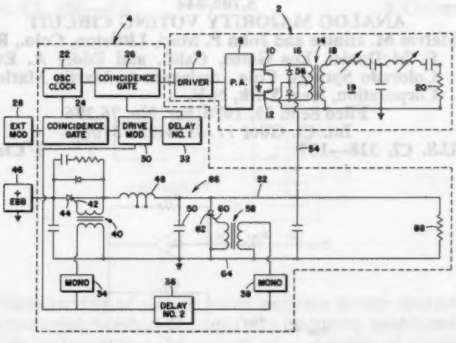


Sun-dependent service interruptions plaguing geostationary communication satellite systems are avoided throughout the year by a system utilizing sun-synchronized space diversity satellites in near-geostationary orbits stabilized with respect to the stars. Two satellites are placed in precisely oriented inclined earth-synchronous circular orbits and a prescribed separation of the mean longitudes of the resultant sidereal figure 8 patterns combined with a precise opposite phasing of the satellites in their respective orbits results in a system in which the two satellites exhibit neither concurrent nor serial outages over the particular geographic zone to be serviced. Earth terminals require only 24-hour sidereal cyclic cam drives for proper antenna pointing and slow diversity switching at infrequent noncritical times.

3,706,038
PULSE TRANSMITTER INCLUDING MEANS FOR CONTROLLING THE AMPLITUDE AND PHASE OF OUTPUT PULSES

Frederick H. Austin; Jimmy D. Rogers, and Joseph J. Wormser, all of Dallas, Tex., assignors to LTV Electrosystems, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 663,796, Aug. 28, 1967, abandoned. This application May 26, 1970, Ser. No. 41,701
Int. Cl. H04b 1/04
U.S. Cl. 325—164 8 Claims

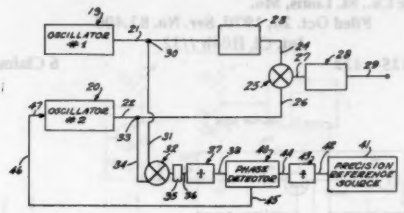


A transmission system for transmitting pulses of radio frequency energy includes a radio frequency amplifier output stage, and a source of pulses connected to the input of the amplifier stage. The output signals of the amplifier stage are modulated by means of a modulator connected to modulate the output current of the amplifier. The modulating signals is synchronized with the input pulses.

3,706,039
FREQUENCY CONTROL CIRCUIT

A. Hans Bott, Quincy, Ill., assignor to Harris Intertype Corporation, Cleveland, Ohio

Filed June 25, 1971, Ser. No. 156,800
Int. Cl. H03b 3/06; H04b 1/04; H04n 5/38
U.S. Cl. 325—184 8 Claims

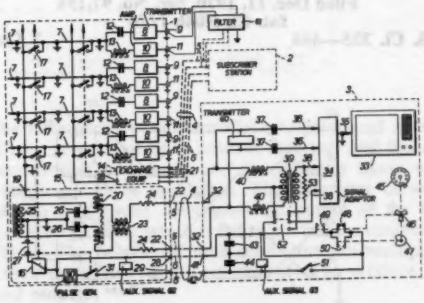


A frequency control circuit utilizing a pair of oscillators operating at different frequencies as the signal source for a television transmitter. The outputs of the two oscillators are mixed together to provide a difference frequency from which is derived the final output transmitting frequency. Also, the difference frequency is coupled to a phase detector where it is compared with a signal derived from a precision reference source. Deviation between the two inputs to the phase detector result in an error signal which is then coupled to one of the two oscillators to control the frequency thereof so that the two inputs to the phase detector have substantially equal frequencies.

3,706,040
WIRED BROADCASTING SYSTEMS WITH PHANTOM CIRCUIT SUPPLYING CONTROL CURRENT ON PROGRAM SIGNAL WIRES

Eric J. Gargini, West Drayton, England, assignor to Communications Patents Limited

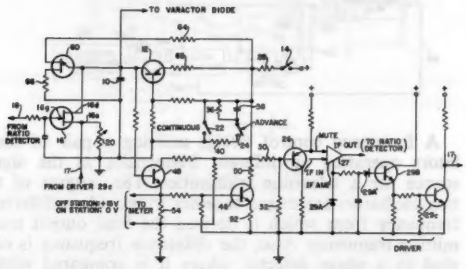
Filed May 21, 1970, Ser. No. 39,497
Claims priority, application Great Britain, May 22, 1969, 26,200/69
Int. Cl. H04c 1/04
U.S. Cl. 325—308 33 Claims



A wired television system provides for two balanced conductor pairs connected between subscribers and a central station with a plurality of signal highway routes. One conductor pair passes the television signals and a control voltage which is interrupted by a dial at the subscriber station to scan a stepping switch at the central station and make a selection or to return to a datum position. Auxiliary signals may be passed along the second pair of conductors. Each program exchange includes

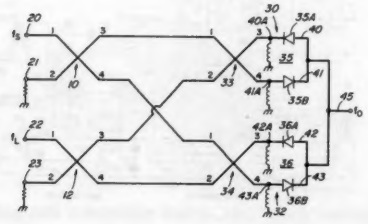
impedance matching networks and filters to provide balanced signals and to process low frequency audio and high frequency television signals.

3,706,041
AUTOMATIC TUNING CIRCUIT
Friedrich Johann Krausser, Jericho, N.Y., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Oct. 20, 1970, Ser. No. 82,400
Int. Cl. H04b 1/32
U.S. Cl. 325—422 6 Claims



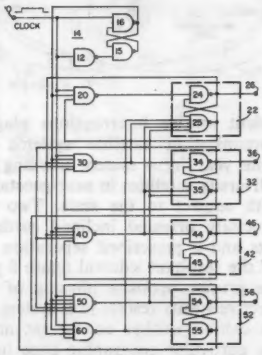
An automatic tuning device for use with a radio receiver includes a capacitor for storing a voltage which determines the frequency to which the device is tuned, means for charging the capacitor, and a control element connected across the capacitor for preventing further charging or discharging of the capacitor after the receiver has been properly tuned. When it is desired to tune the receiver to a new station, an advance switch is actuated, causing the enabling voltage from the control device to be removed so that the capacitor can be further charged. When the capacitor has been charged to a voltage corresponding to the high end of the frequency band, a unijunction transistor across the capacitor is fired, causing the capacitor to discharge to a voltage corresponding approximately to the lowest frequency in the band of interest.

3,706,042
BALANCED MIXER
Robert Tenenholtz, Framingham, Mass., assignor to Sage Laboratories, Inc., Natick, Mass.
Filed Dec. 11, 1970, Ser. No. 97,196
Int. Cl. H04b 1/26
U.S. Cl. 325—446 7 Claims



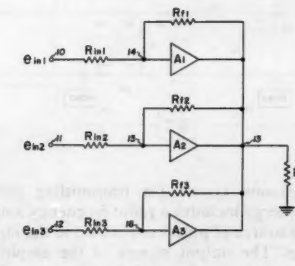
One disclosed embodiment of the invention is a balanced mixer which receives an input signal and a local oscillator signal, and generates an intermediate frequency output signal. The input signal is coupled to one port of a first quadrature hybrid while the local oscillator signal is coupled to one port of a second quadrature hybrid. The outputs of these quadrature hybrids are interconnected to first and second quadrature hybrid mixers each including a pair of oppositely poled diodes. The output of these quadrature hybrid mixers are intercoupled to an output terminal to provide the intermediate frequency output signal.

3,706,043
SYNCHRONOUS PARALLEL COUNTER WITH COMMON STEERING OF CLOCK PULSES TO BINARY STAGES
John R. Reinert, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Sept. 30, 1971, Ser. No. 185,179
Int. Cl. H03k 21/16
U.S. Cl. 328—42 10 Claims



Parallel counter constructed as an integrated circuit with a plurality of pairs of NAND gates forming binary stages, and a steering circuit including input NAND gates associated with the binary stages. The steering circuit includes couplings from the outputs of the binary stages to the inputs of the higher order input NAND gate, and also couplings from the outputs of the input NAND gates to reset inputs of the lower order binary stages. The clock pulses may or may not be periodic and may have different pulse durations, and an input circuit coupled to all of the input NAND gates disables the same at a predetermined time after the beginning of each clock pulse. A reset gate is coupled to the reset input of the highest order binary stage to reset the counter at the desired count.

3,706,044
ANALOG MAJORITY VOTING CIRCUIT
Melvin M. Hintze and John P. Mari, Littleton, Colo., Roy F. McDaniel, Los Gatos, Calif., and Eddie A. Evel, Colorado Springs, Colo., assignors to Martin Marietta Corporation, New York, N.Y.
Filed Sept. 29, 1970, Ser. No. 76,396
Int. Cl. G06f 11/08; H03k 5/08
U.S. Cl. 328—137 1 Claim



This is a circuit for providing to a load the middle valued analog signal of three redundant channels. Each

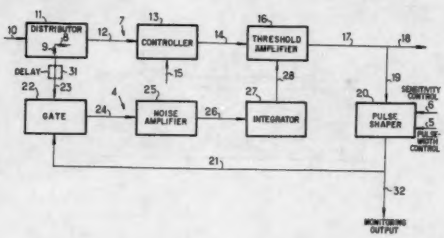
channel is terminated in a high gain amplifier having high impedance constant current characteristics when saturated. The amplifier outputs are connected at a common point, and three negative feedback circuits connect the common point to the amplifier inputs.

3,706,045

METHOD AND A DEVICE FOR ELIMINATING THE NOISE IN A TRANSMISSION CHAIN OF RADIO-ELECTRIC SIGNALS

Bernard Salvert, Villejuif, France, assignor to Electronique Marcel Dassault, Paris, France

Filed Apr. 12, 1971, Ser. No. 132,983
Claims priority, application France, Apr. 17, 1970, 7014004
Int. Cl. H03k *5/00*
U.S. Cl. 328—165 **10 Claims**



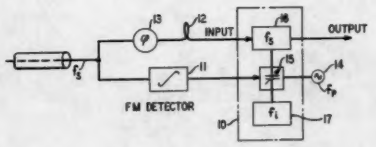
A method and a device for eliminating the noise in a network traversed by radio-electric signals, such as a receiving channel, are described. The signals received are fed to a threshold amplifier via a first line and to a gate via on a second line, the output of the amplifier being applied to the gate to generate at the output thereof a signal which is representative of the noise only and which is applied to the amplifier as a control factor therefor.

3,706,046

PHASE-LOCKED SIGNAL SOURCE

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 13, 1971, Ser. No. 207,502
Int. Cl. H03f *1/00*
U.S. Cl. 330—4.5 **5 Claims**



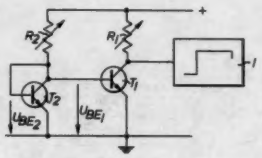
Phase-locking of one or more separate power sources is a convenient method of amplifying frequency modulated signals or combining the outputs of a plurality of signal sources. Certain types of devices, however, do not submit to phase-locking. In such cases, the sources are used to pump a parametric device, and the parametric device is phase-locked. In this way, phase coherency is induced among the outputs of one or more signal sources, while the sources themselves are operated in their preferred, free-running state.

3,706,047

AMPLIFIER CIRCUIT

Gerhard Gunzel, Heilbronn, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Jan. 29, 1971, Ser. No. 110,882
Claims priority, application Germany, Jan. 31, 1970, P 20 04 461.5
Int. Cl. H03f *3/04*; G01b *7/16*
U.S. Cl. 330—24 **4 Claims**



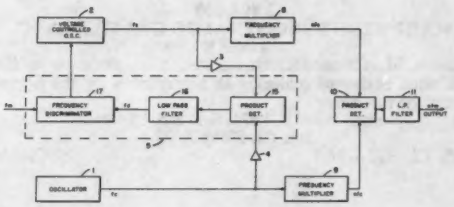
An amplifier circuit comprises a common-emitter connected transistor into the collector path of which is connected a first resistance also connected to a voltage source and a voltage divider for adjusting the base emitter direct voltage and including a series connection of a second resistance and a diode, the second resistance being connected to the voltage source and the diode being connected in parallel with the base-to-emitter path of the transistor and the first and second resistances being semiconductor strain gauges.

3,706,048

INDIRECT FREQUENCY MULTIPLICATION SYSTEM

Stephen L. Johnston, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

Filed Jan. 19, 1972, Ser. No. 218,966
Int. Cl. H03b *19/00*
U.S. Cl. 331—53 **3 Claims**



The frequencies of a controlled oscillator and a fixed oscillator are sensed by a product detector, and the difference is sent to a frequency discriminator along with the frequency to be multiplied. The difference between these two frequencies determines the output of the frequency discriminator which is fed to control the controlled oscillator. The outputs of both oscillators are multiplied and their multiplied results are subtracted to produce the desired output.

3,706,049

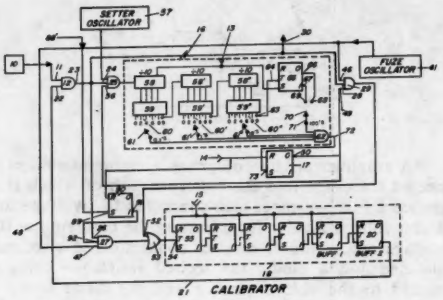
TIME OSCILLATOR CALIBRATOR CIRCUIT

Lester S. Kelem, Rockaway, and Stephen E. Reade, Hillside, N.J., assignors to the United States of America as represented by the Secretary of the Army

Filed Jan. 4, 1972, Ser. No. 215,376
Int. Cl. H03b *3/00*
U.S. Cl. 331—44 **9 Claims**

A calibration circuit for a fuze time oscillator which includes the application of the pulses from a highly accurate

oscillator to a time/base counter whose output is applied to inhibit an AND gate upon the receipt of a selectable number of pulses (time). The pulses emanating from the fuze oscillator are fed through the AND gate to an 11 stage counter and to another 11 stage binary counter of a like number of stages. After the selected fixed period the input to the 11 stage counter is inhibited but the binary counter continues to receive the pulses. Upon filling up of the binary counter the fuze oscillator output is again

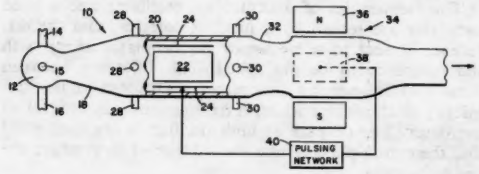


applied to the 11 stage counter until it fills up and provides an output which inhibits both itself and the binary counter. The binary is now left unfilled to the extent of a specific number of pulse from the fuze oscillator which is equal to the time initially set in the time base counter by the accurate oscillator. Therefore, the binary will count out at the selected time thereafter, thus providing a specific, accurate period and this time factor will be independent of the relative accuracy of the fuze oscillator and its frequency.

3,706,050
MAGNETOHYDRODYNAMIC GAS DYNAMIC LASER

Charles M. Cason III, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

Filed Nov. 2, 1971, Ser. No. 194,961
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 **5 Claims**

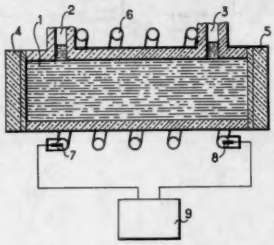


A pulsed gas laser utilizes continuously expanding gases that pass through the lasing chamber and subsequently generate a direct current, pulsed electric output which is fed back to stimulate laser emission. A conventional gas burner and nozzle assembly couple flowing gases into a standard laser cavity. Gases leaving the laser cavity pass between poles of an MHD magnet, generating output electric power which is transformed into high voltage pulses of output power. An alkali metal component is introduced into the system before the flowing gases reach the MHD magnet for increasing electrical conductivity of the gas therein and thereby enhancing large pulses of electrical energy feedback for stimulating additional laser action.

3,706,051
LIQUID LASER

Franck Collier, Longjumeau, Jean-Daniel Dauchy, Paris, Christian Le Sergent, Sainte-Genevieve-des-Bois, and Maurice Michon, Dravell, France, assignors to Compagnie Generale d'Electricite, Paris, France

Filed Sept. 3, 1971, Ser. No. 177,721
Claims priority, application France, Sept. 4, 1970, 32,265
Int. Cl. H01s 3/20
U.S. Cl. 331—94.5 **6 Claims**

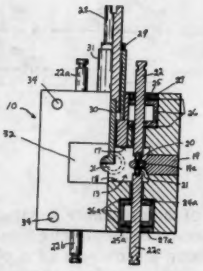


A laser generator having a liquid active medium consisting of a solvent comprising products of the hydrolysis of thionyl chloride and of antimony chloride in which a doping medium is dissolved.

3,706,052
SATURABLE CORE SQUARE WAVE OSCILLATOR WITH SWITCHING TRANSIENT REDUCING MEANS

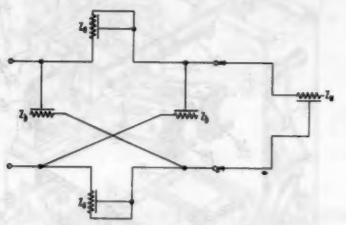
Robert F. Canup, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

Filed Mar. 1, 1971, Ser. No. 120,033
Int. Cl. H03k 3/30
U.S. Cl. 331—113 A **6 Claims**



Transistor oscillator of saturable core square wave type, it employs an output transformer and a saturable core transformer plus magnetic feedback means to absorb leakage-inductance effects.

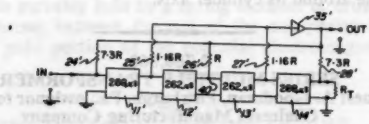
3,706,053
SYNTHESIZED NETWORK FOR SIGNAL TRANSMISSION
Takuya Iwakami, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan
Filed Feb. 18, 1971, Ser. No. 116,360
Claims priority, application Japan, Feb. 21, 1970, 45/14,891
Int. Cl. H04b *3/40*
U.S. Cl. 333—23 4 Claims



A synthesized network is formed equivalent to a coaxial cable of any desired length using distributed RC networks of finite length constructed by integrated circuit techniques. A symmetrical network having two input and two output ports includes a first pair of uniformly distributed RC elements in series branches of the symmetrical circuit and a second pair of uniformly distributed RC elements in parallel branches. The first and second pairs of uniformly distributed elements are of substantially identical length with each of the first pair having a pair of terminals short circuited and each of the second pair having a pair of terminals open circuited. A third uniformly distributed RC element is connected to the output terminals of said symmetrical circuit and has a driving point impedance substantially equal to the image impedance of said symmetrical network. The synthesized network is equivalent to a coaxial cable of length L and having a coaxial cable constant K where the total resistance R_T and capacitance C_T of each of said first and second uniformly distributed RC networks satisfy the condition

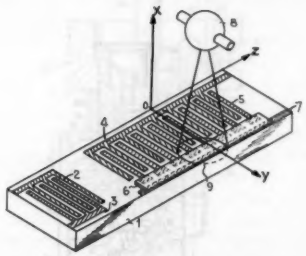
$$R_T C_T = \left(\frac{KL}{2}\right)^2$$

3,706,054
CHANNEL SHAPING FILTER
Arthur T. Starr, New Barnet, and David G. Edwards, Tonbridge Wells, England, assignors to Xerox Corporation, Stamford, Conn.
Filed Nov. 6, 1970, Ser. No. 87,547
Claims priority, application Great Britain, Apr. 21, 1970, 19,040/70
Int. Cl. H04b *3/14*
U.S. Cl. 333—28 R 6 Claims



A channel shaping filter for location between the modulator and the demodulator of a channel of a data transmission system, the filter being formed by at least one transversal network of the kind comprising at least two time delay network circuits each having an input and an output and connected together in series so as to form a chain having an input, which constitutes the network input, and an output and a number of intermediate junctions each formed where the output of one said circuit is connected to the input of the next succeeding said circuit in the chain, the network also including a separate corresponding pick-off resistance associated with and connected to each of the said chain input, the said chain output and the said intermediate junctions so as to provide in response to an input signal appearing at the network input, a number of pick-off signals equal in number to the number of the resistances, and the network also including means for combining the pick-off signals in predetermined relationship to produce a network output signal, the time delay circuits and the pick-off resistances and the said combining means of the network being selected to provide a preselected relationship between the output and the input signals of the network.

3,706,055
ELECTROMECHANICAL DELAY WITH CONTINUOUSLY ADJUSTABLE DELAY
Eugene Jean Dieulesaint and Pierre Hartman, Paris, France, assignors to Thomson-CSF
Filed Aug. 6, 1971, Ser. No. 169,764
Claims priority, application France, Aug. 27, 1970, 7031300
Int. Cl. H03h *7/36, 9/30*
U.S. Cl. 333—30 R 8 Claims



The present invention relates to continuously adjustable delay lines based upon propagation of a surface vibrational wave in a piezoelectric wave guide which is provided at its extremities with interdigitated comb-shaped electrodes.

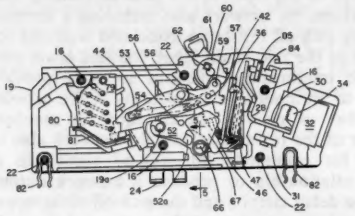
The delay line in accordance with the invention comprises at least one comb structure the teeth of which are linked to a common connection by a semiconductor layer which is rendered locally conductive by means of a displaceable light spot.

This type of line can be utilised in a frequency range extending from one megacycle to several hundreds of megacycles, in order to produce delays adjustable from a fraction of a microsecond to several tens of microseconds.

3,706,056
PARALLEL-POLE CIRCUIT BREAKER
Ferdinand E. Chabot, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.
Filed Aug. 9, 1971, Ser. No. 170,106
Int. Cl. H01h *73/48*
U.S. Cl. 335—10 2 Claims

A four-pole circuit breaker having two line terminals and two load terminals, each terminal serving two poles electrically connected in parallel. The movable contact arms of each pair of parallel poles are connected to a single thermal and magnetic tripping device in one pole

space, the other pole space having no tripping device but being provided with a latch which also serves as a trip



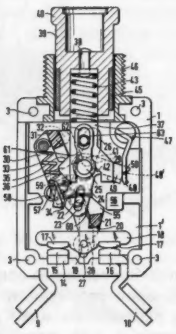
indicator for the circuit breaker when the pole space is provided with a window.

3,706,057

SINGLE OR MULTIPOLE PUSH BUTTON ACTUATED EXCESS CURRENT SWITCH HAVING THERMAL AND/OR ELECTROMAGNETIC TRIP

Jakob Ellenberger, Altdorf, Germany, assignor to Ellenberger & Poensgen G.m.b.H., Altdorf, near Nurenberg, Germany

Filed Dec. 29, 1971, Ser. No. 213,382
Claims priority, application Germany, May 13, 1971, P 21 23 765.0
Int. Cl. H01h *73/48*
U.S. Cl. 335—23 **9 Claims**



A single or multipole push button actuated excess current switch having a thermal and/or electromagnetic trip. In this switch the push button is connected to a contact bridge by means of a lever arrangement. The lever connected to the contact bridge is pivoted about a pin which is moveable in a groove. This groove is provided with a detent which is engaged by the pin during switching on. The lever connected to the contact bridge is provided with a protuberance which co-operates with a stop on the housing of the switch to raise the pin to disengage from the detent to thereby cause instantaneous switching on of the switch.

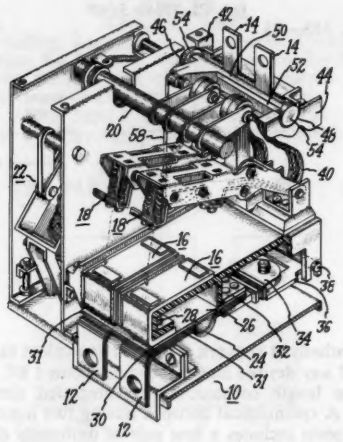
3,706,058

MAGNETIC TRIPPING MECHANISM FOR THERMAL CIRCUIT BREAKER

Philip J. Hopkinson, Pittsfield, Mass., assignor to General Electric Company

Filed Sept. 22, 1970, Ser. No. 74,407
Int. Cl. H01h *9/00*
U.S. Cl. 335—174 **8 Claims**

A circuit breaker having a thermal bimetal operating member with an independent magnetic trip actuating mechanism. The bimetal trip member is in circuit with the current flow through the circuit breaker and on heating pivots in a direction to trip the circuit breaker. A plastic armature is pivotally mounted adjacent the breaker leads on one side of the breaker and is provided with magnetic



inserts. A push rod is provided connected between the plastic armature and the breaker latch mechanism. On severe fault currents the current flow through the breaker leads attracts the magnetic inserts pivoting the plastic armature in a direction to trip the circuit breaker.

3,706,059

ANNULAR MAGNET

Frederik H. Theyse, Voorschoten, Netherlands, assignor to Reactor Centrum Nederland, The Hague, Netherlands

Filed Apr. 12, 1971, Ser. No. 133,122
Claims priority, application Netherlands, Apr. 20, 1970, 7005648
Int. Cl. H01f *7/02*
U.S. Cl. 335—302 **5 Claims**

Annular magnet composed of a plurality of cylindrical permanent magnets, with similar poles pointing in the same direction, at least one of these magnets being rotatable around its cylinder axis.

3,706,060

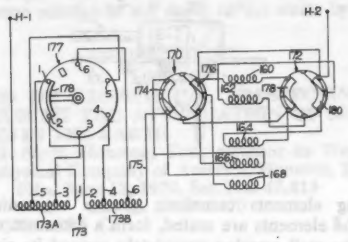
SERIES-MULTIPLE TRANSFORMER

Ernest A. Goodman, Pittsburgh, Pa., assignor to Allis-Chalmers Manufacturing Company

Filed May 14, 1971, Ser. No. 143,317
Int. Cl. H01f *21/12*
U.S. Cl. 336—147 **11 Claims**

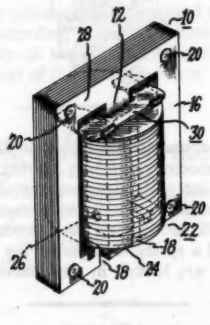
An electrical transformer having a plurality of untapped primary winding sections connectable in either series or in parallel for alternatively either a higher primary voltage rating or a lower primary voltage rating, a tapped primary winding section connected in series with

the plurality of untapped winding sections in both the series and in the parallel connection thereof and permitting adjustment by a tap changer switch of the effective



number of primary turns, whereby to adjust alternatively either the higher primary voltage rating or the lower primary voltage rating of the transformer.

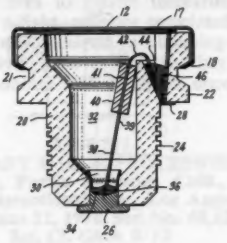
3,706,061
INDUCTION WATT-HOUR METER POTENTIAL COIL MOUNTING
Alexander Loika, Jr., Somersworth, N.H., assignor to General Electric Company
Filed June 11, 1971, Ser. No. 152,173
Int. Cl. H01f *27/30*
U.S. Cl. 336—197 **4 Claims**



The potential coil of an induction watt-hour meter is encapsulated in an electrically insulating resinous material and mounted on the core leg of the potential electromagnet of the meter. The lower end of the encapsulated coil which is closest to the voltage pole face is generally fixed to the core leg of the electromagnet preferably by a plastic adhesive material. The upper end of the coil is movably held by a spring member or crushable plastic bosses between the top of the encapsulated coil and the yoke portion of the potential electromagnet.

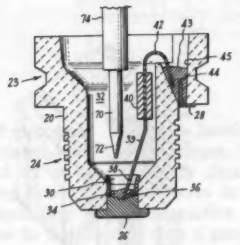
3,706,062
REMAKE PROOF TIME DELAY FUSE
Edwin B. Judd, East Greenwich, R.I., assignor to General Electric Company
Filed Apr. 30, 1971, Ser. No. 138,989
Int. Cl. H01h *85/10, 85/20, 85/62*
U.S. Cl. 337—159 **1 Claim**

Plug fuses of "type S" or Edison base varieties in which the fuse link is so formed and disposed in the fuse body that once the fuse has blown it is not possible for the remaining fuse link parts to move within the fuse body so as to cause a reconnection of these remaining parts such



as will allow electrical current to again flow through the fuse.

3,706,063
TYPE (S) FUSE AUTOMATION
Colin Gillett, East Greenwich, R.I., assignor to General Electric Company
Filed Apr. 30, 1971, Ser. No. 138,987
Int. Cl. H01h *85/10, 85/20, 85/62*
U.S. Cl. 337—262 **1 Claim**

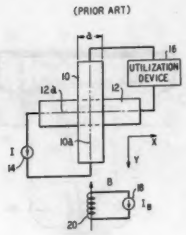


The present invention relates to plug fuses referred to in the wiring device field as of a "type S" or Edison base varieties and to improvements in the manufacture of these fuses. More specifically it relates to such fuses in which manufacturing may be accomplished with automatic equipment and for which the structure of the fuses includes an alignment of the fuse link mostly parallel to the axial direction in the fuse and which permits a reliable parallel entry of a tool or other article into the full depth of the plug fuse.

3,706,064
MAGNETICALLY CONTROLLED SUPERCURRENT SWITCH
Robert Carr Dynes and Theodore Alan Fulton, Berkeley Heights, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 7, 1971, Ser. No. 141,142
Int. Cl. H01c *7/16*
U.S. Cl. 338—32 S **12 Claims**

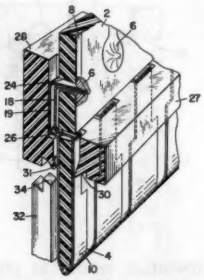
In a conventional magnetically controlled supercurrent device the relationship between the critical supercurrent and the applied magnetic field resembles the absolute value of a Fraunhofer diffraction pattern having an absolute maximum at zero magnetic field and decreasing secondary maxima at periodic intervals of non-zero magnetic field. In order to reduce the magnitude of the secondary maxima, the direction of the applied magnetic field and the geometry of the weak-link interfacial region are

mutually adapted so that the critical supercurrent density distributioa normal to the direction of the field has a



central maximum and gradually decreasing values on either side thereof.

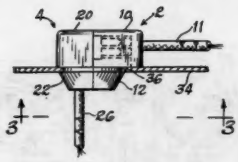
3,706,065
ELECTRIC CONTACT ARRANGEMENT
Heinz Knitter, Heilbronn, and Paul Sorg, Fuerfeld, Germany, assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed June 18, 1971, Ser. No. 154,394
Claims priority, application Germany, July 24, 1970, P 20 36 829.0
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 LC **12 Claims**



This invention relates to a plurality of electrical contacts coupled to a non-conductive carrier board. The electrical contacts have a contact surface exposed on at least one surface of the carrier board and have another surface for connecting the electrical contacts to conducting paths on the carrier board. A protective barrier strip is attached to the carrier board at a location between the contact surfaces and the connecting surfaces. The protecting barrier strip protects the contact surfaces from exposure to damage by solder and flux or other materials used when the connecting surfaces are joined to the conducting paths.

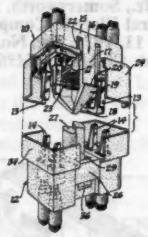
3,706,066
ELECTRICAL CONNECTOR
Larry L. Shroyer, Kendallville, Ind., assignor to Lyall Electric, Inc., Albion, Ind.
Filed Apr. 19, 1971, Ser. No. 135,128
Int. Cl. H01r *13/54, 13/66, 21/16*
U.S. Cl. 339—59 R **21 Claims**

An electrical connector to be mounted in an opening in a wall by means of mechanical retaining portions formed on the connector elements is disclosed. The connector consists of male and female elements, each of which has a retaining portion or portions formed thereon, so that when they are mated the retaining portions of each element will engage around the sides of a wall opening. The male and female elements will be maintained in electrical contact with each other and then the assembled connector will be held in the wall opening. In one embodiment the



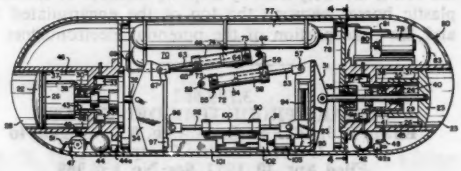
retaining elements constitute groove segments which, when the elements are mated, form a grommet which engages the wall opening completely around its sides.

3,706,067
ELECTRICAL CONNECTOR ASSEMBLY
Richard J. Hanson, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Dec 11, 1970, Ser. No. 97,129
Int. Cl. H01r *13/54, 13/62, 13/64*
U.S. Cl. 339—45 M **3 Claims**



An electrical connector assembly is disclosed as comprising two connector members having alignable electrical terminals, integral alignment members for aligning the electrical terminals prior to their engagement, integral latching members for locking the connector members in engagement, and a spring to separate the connector members unless they are locked in engagement.

3,706,068
FISH LOCATOR WITH AUDIO MONITOR
Thurman O. Bradshaw Tulsa, Okla. (129 W. Spruce, Liberal, Kans. 67901), and William W. Rogers, 1317 S. 99th East Ave., Tulsa, Okla. 74128
Filed Jan. 15, 1971, Ser. No. 106,710
Int. Cl. G01s *9/70*
U.S. Cl. 340—3 R **6 Claims**



A new and improved fish locator with an audio monitor for indicating a change depth at which marine objects are located or moving, including visual means, with audio

means to instantly and accurately indicate the change in depth by an audio tone change of all moving marine objects between the fish locator and the lowest depth of the water and by a "beep" indicating the surface of the water and a second beep of lower tone indicating the bottom of the water—the second beep delayed from the surface tone relative to the depth of the water by a time delay.

3,706,069

METHOD OF GEOPHYSICAL PROSPECTING BY MEASURING THE ATTENUATION OF SEISMIC WAVES IN THE EARTH

Carl H. Savit, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed June 18, 1970, Ser. No. 47,415
Int. Cl. G01v *1/30*
U.S. Cl. 340—15.5 CP **5 Claims**

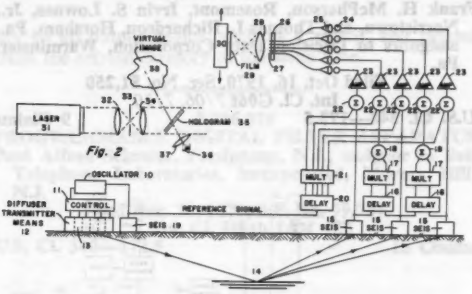


Fig. 2

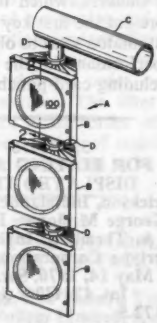
This invention contemplates a method of seismographic exploration by recording reflection seismic signals and obtaining a measure of the signal attenuation between two reflecting interfaces of the geologic strata.

3,706,070

VEHICULAR TRAFFIC CONTROL SIGNAL AND GASKET

Willis M. Eikenberry, Bettendorf, Iowa, assignor to Gulf + Western Industries, Inc., New York, N.Y.

Filed Nov. 9, 1970, Ser. No. 88,054
Int. Cl. G08b *5/36*
U.S. Cl. 340—119 R **8 Claims**



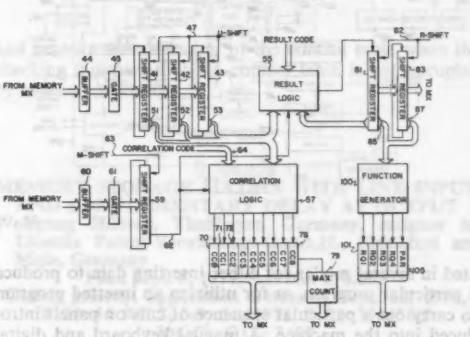
A light assembly particularly adapted for use as a traffic control signal having a molded plastic assembly housing with at least one open end area. A molded plastic end cover door is pivotally mounted to one side of the open end area in order that it might be arcuately swung into and out of a covering relationship with the open end. The cover door includes therein a generally circular light component receiving area therein. A resilient gasket member which includes a plurality of circumferentially extending component receiving grooves is received on the receiving area to extend therearound. A light diffusing lens and a light reflector associated with a light source are resiliently received in clamping engagement by one of the receiving grooves such that they are disposed in a desired relationship with the cover door.

3,706,071

BINARY IMAGE PROCESSOR

Stephen B. Gray, Pacific Palisades, Calif., assignor to Information International, Inc., Los Angeles, Calif.

Filed June 22, 1970, Ser. No. 48,124
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 Q **7 Claims**



In the image processor disclosed herein, unknown images are correlated with known images, both images being represented by arrays of binary data adapted to be arranged along first and second axes so as to form a matrix corresponding to the respective image. The processor operates in conjunction with a general purpose digital computer and random access memory which provide the processor with the image data arrays and certain operating parameters. According to one aspect of the invention, the unknown image is scanned in blocks comprising a plurality of bits and respective correlation function are generated so that the effect of shifting of the unknown image or correlation values may be readily determined. In another aspect of the invention, the unknown image is modified or treated to develop a result image and various characteristics of the result image are measured and counted. This latter process may, under program control, provide a result image which is an improved, i.e. more easily recognized, version of the original unknown image. Alternatively, this process may be utilized to provide information useful in analyzing and characterizing an unknown image.

3,706,072

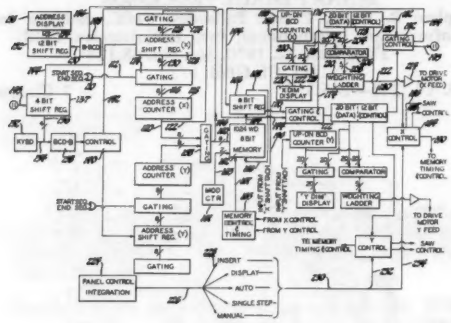
DIGITAL COMMAND CONTROL SEQUENCER AND MACHINE CONTROLLED THEREBY

Henry R. Greenley, Bloomfield Hills, and William E. Craig, Wyoming, Mich.; said Greenley assignor to C. O. Porter Machinery Company, said Craig assignor to Computer Specialties Corporation, both of Grand Rapids, Mich.

Filed Jan. 21, 1970, Ser. No. 4,629
Int. Cl. H04g *1/00*
U.S. Cl. 340—147 P **8 Claims**

A panel saw for cutting panels into smaller pieces has a first carriage for moving the panels in steps in one direction to be sawed in a direction at right angles thereto and

a second carriage for moving the sawed pieces in steps in the second direction to be sawed in the first direction into still smaller pieces and is controlled by a digital command sequencer including memory and logic units through which a desired sequence of feed movements and sawing actions may be commanded automatically in accordance with a program introduced manually or from an external source directly into the memory of the sequencer. Selector means enable the sequencer to be operated in several modes for either inserting data to produce a particular program, or for utilizing an inserted program to carry out a particular sequence of cuts on panels introduced into the machine. A manual keyboard and digital display panels allow the operator to generate dimensional data and to insert it into the controller's memory directly for subsequent utilization to command a sequence of sawing and feeding operations in accordance with the particular program selected.



3,706,073
GRAPHIC DISPLAY APPARATUS FOR DIRECT ANALYSIS OF ELECTRIC POWER SYSTEMS

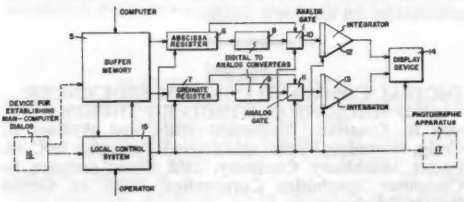
Paul G. Dimo and Dimitrie P. Dimo, Bucharest, Rumania, assignors to Ministerul Energiei Electrice, Bucharest, Rumania

Continuation-in-part of application Ser. No. 590,780, Oct. 31, 1966. This application Mar. 27, 1970, Ser. No. 23,284

Claims priority, application Rumania, Nov. 12, 1965, 50,537

Int. Cl. G06f *3/14*

U.S. Cl. 340—172.5 **5 Claims**



The operation of an electrical power system is visually analysed by means of "nodal images" displayed on the screen of a cathode ray tube. Nodal images are a graphical representation of the vectorial sum of short-circuit current vectors, in the central node of a standard, equivalent network, named REI. The components of the REI network and of the corresponding "nodal images," are computed in a digital computer. The necessary computed values are transferred from computer's memory to the proposed apparatus, which is a specialized peripheral equipment to the above-mentioned computer and consists of buffer memory, registers, counters, comparators, digital to analog converters, integrators, gates, displaying device and means for establishing a man-computer dialog. This apparatus takes in charge the conversion of the computed values from digital to analog form and the display of the nodal image, as well as the accounting of operator's requests.

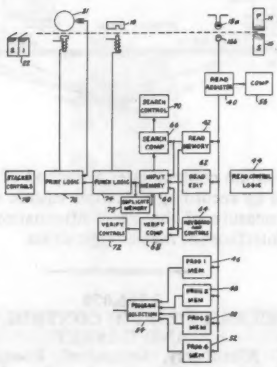
3,706,074
DATA RECORDER

Frank H. McPherson, Rosemont, Irvin S. Lownes, Jr., Norristown, and Thomas L. Richardson, Horsham, Pa., assignors to Decision Data Corporation, Warminster, Pa.

Filed Oct. 16, 1970, Ser. No. 81,250

Int. Cl. G06f *7/06, 7/10*

U.S. Cl. 340—172.5 **9 Claims**



A data recorder characterized by plurality of input hoppers and output stackers, which together with other design features represent the first key entry card preparation machine fully automated so as to obviate the need for card handling in the performance of the normal operations of a data recorder including card punching and verification.

3,706,075
APPARATUS FOR EDITING AND CORRECTING DISPLAYED TEXT

Walter G. Fredrickson, Indialantic, Albert W. Heitmann, Melbourne, George M. Jones, Indian Harbour Beach, and Howard A. Thrailkill, Indialantic, Fla., assignors to Harris-Intertype Corporation, Cleveland, Ohio

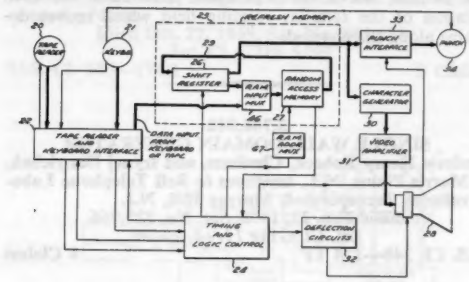
Filed May 14, 1970, Ser. No. 37,177

Int. Cl. G06f *3/14*

U.S. Cl. 340—172.5 **22 Claims**

A console for keyboard editing and correcting of text, such as newspaper copy, displayed on the screen of a cathode ray tube. The encoded text copy is recirculated in a refresh memory having a large capacity dynamic shift register and a small capacity random access memory where various editing and correcting changes may be made. The text displayed on the cathode ray screen may be "rolled up" or "rolled down" one line at a time as

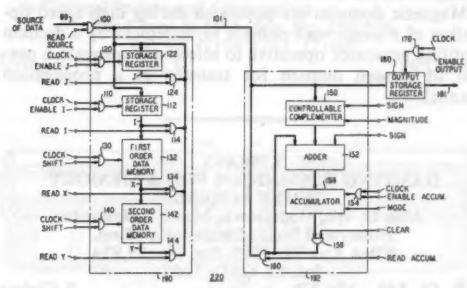
the editing proceeds. Any selected block of the text may be transmitted from the output of the recirculating memory to an output device, such as a punch, and deleted from the refresh memory at the same time.



3,706,076
PROGRAMMABLE DIGITAL FILTER APPARATUS

Paul Alfred Schuster, Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 99,747
Int. Cl. H04b *3/04*
U.S. Cl. 340—172.5 15 Claims



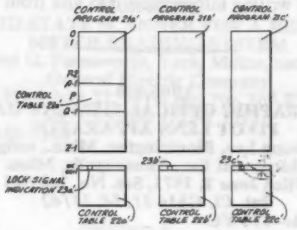
A digital filter with data memories arranged in the configuration of a filter of relatively low order (e.g., second order) and with a single time-shared arithmetic unit under the control of instruction and coefficient memories. The data, instruction, and coefficient memories of the filter are arranged to permit the realization of filter transfer functions of arbitrary order on data from an arbitrary number of sources. The filter is readily programmable with respect to the order of the filter functions to be realized, the number of sources of data to be processed, and the filter coefficients to be used.

3,706,077
MULTIPROCESSOR TYPE INFORMATION PROCESSING SYSTEM WITH CONTROL TABLE USAGE INDICATOR

Takashi Mori, Kawasaki, and Tatsuya Yoshikawa, Tokyo, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 6, 1971, Ser. No. 104,206
Claims priority, application Japan, Jan. 12, 1970, 45/3,356
Int. Cl. G06f *15/16*
U.S. Cl. 340—172.5 4 Claims

An indicator indicates whether a control table utilized in the execution of a control program is being occupied by a processor, each of a plurality of processors being subject to control programs. Each of the processors includes a control for initially checking the indication of the indicator when a processor is to utilize a control table and permits the utilization of the control table when the checking indicates that the control table is not occupied by another processor.



3,706,078
MEMORY STORAGE MATRIX WITH LINE INPUT AND COMPLEMENTARY DELAY AT OUTPUT

Wolfgang Hilberg, Thalfingen, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

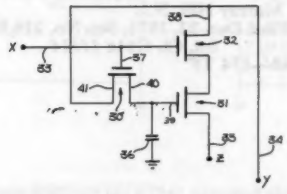
Filed Sept. 8, 1971, Ser. No. 178,659
Claims priority, application Germany, Sept. 11, 1970, P 20 44 947.2; July 16, 1971, P 21 35 636.5
Int. Cl. G11c *7/00*
U.S. Cl. 340—173 R 9 Claims

A matrix memory having the input ends of its column and row conductors and the output ends of its readout conductors provided with delay elements producing respectively different amounts of delay so that the matrix provides a constant delay time between the application of readout signals and the delivery of the resulting information to an amplifier connected to the outputs of the readout conductor delay elements.

3,706,079
THREE-LINE CELL FOR RANDOM-ACCESS INTEGRATED CIRCUIT MEMORY

Leslie L. Vadasz, Sunnyvale, and Joel A. Karp, Cupertino, Calif., assignors to Intel Corporation, Mountain View, Calif.

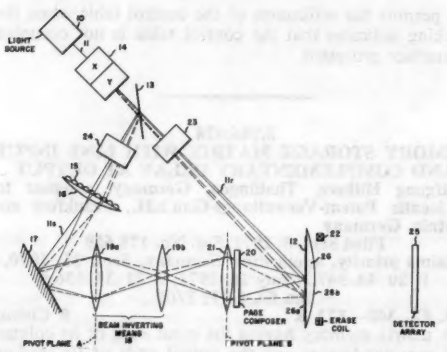
Filed Sept. 16, 1971, Ser. No. 180,987
Int. Cl. G11c *11/24*
U.S. Cl. 340—173 CA 7 Claims



A three-line dynamic storage cell readily adaptable for use in a random-access integrated circuit memory which utilizes metal-oxide-semiconductor (MOS) devices

or metal-insulated-semiconductor (MIS) devices is disclosed. The cell, which includes three field effect devices, utilizes the parasitic capacitance (associated with a lead coupling one field effect device with another device and the substrate supporting the cell) for storing an electrical charge. Three control lines are used with the cell for reading and writing information into and from the cell.

3,706,080
HOLOGRAPHIC OPTICAL MEMORY HAVING PIVOT LENS APPARATUS
Tzuo-Chang Lee, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed June 1, 1971, Ser. No. 148,505
Int. Cl. G11c *11/14, 11/42*
U.S. Cl. 340—174 YC **16 Claims**

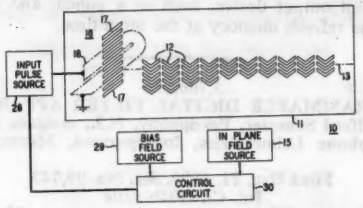


A holographic optical memory system includes pivoting lens apparatus positioned proximate the memory medium. This arrangement allows the holograms to be read out using the same beam as that which acted as the reference beam during the storage of the holograms. The pivoting lens apparatus pivots the portion of the read out beam which is diffracted by each hologram into a common reconstructed image plane. A photodetector array is positioned at the reconstructed image plane.

3,706,081
FAIL-SAFE DOMAIN GENERATOR FOR SINGLE WALL DOMAIN ARRANGEMENTS
Andrew Henry Bobeck, Chatham, Roman Kowalchuk, Somerville, and John Peter Reekstin, Jr., Morristown, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 22, 1971, Ser. No. 210,906
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF **8 Claims**

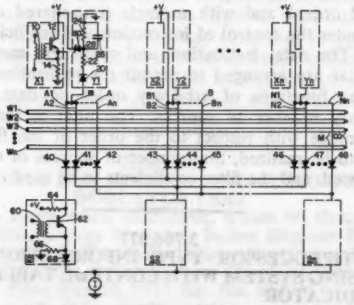
A generator for single wall domain arrangements of the field access type is provided by locally reducing the separation between the plane in which the pattern of magnetically soft channel-defining elements lies and the domain layer. A domain is generated at that portion of the pattern, where the separation is reduced, for each rotation of the familiar rotating field which moves domains along the channel.

3,706,082
SINGLE WALL DOMAIN GENERATOR
Andrew Henry Bobeck, Chatham, and Irynej Danylchuk, Morris Plains, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Feb. 22, 1972, Ser. No. 227,966
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **8 Claims**



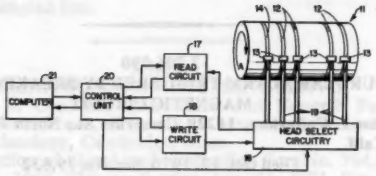
Magnetic domains are generated during high speed operation of a single wall domain arrangement by a domain shuttling generator operative to selectively separate a portion of a seed domain for transfer to a propagation channel.

3,706,083
DAMPING TECHNIQUE FOR A MEMORY DRIVE SCHEME
Alan C. Wu, Watertown, Mass., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Apr. 20, 1970, Ser. No. 29,974
Int. Cl. G11b *5/00*
U.S. Cl. 340—174 TB **8 Claims**



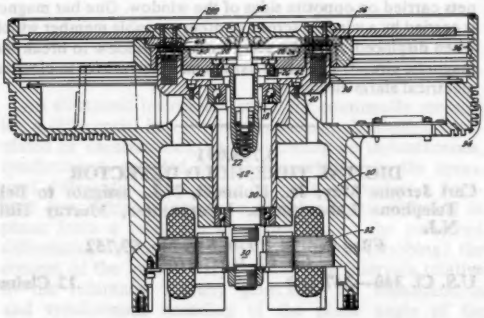
A memory drive circuit has a switch for applying voltage from a voltage source to a number of conductive lines and another switch for selecting one of these conductive lines. A resistive element and a diode are serially connected between the conductive lines and a junction having a reference voltage which biases the diode for conduction.

3,706,084
MASS MEMORY SYSTEM
William M. Regitz, Franklin, and Thomas M. Dundon, Southboro, Mass., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 27, 1969, Ser. No. 869,618
Int. Cl. G11b 5/00
U.S. Cl. 340—174.1 9 Claims



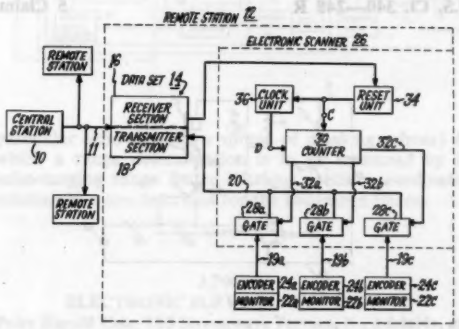
In the recording of binary information by a phase modulation technique, a single guard bit is used between independently written data blocks. This guard bit is chosen to be the complement of the first data bit in the data block.

3,706,085
MAGNETIC HOLDDOWN FOR MAGNETIC DISC SYSTEM
Albert V. Mowrey, Canoga Park, John H. Huiskes, Los Angeles, and Abraham Brand, Encino, Calif., assignors to General Instrument Corporation
Filed June 9, 1971, Ser. No. 151,270
Int. Cl. G11b 5/82, 17/00
U.S. Cl. 340—174.1 C 16 Claims



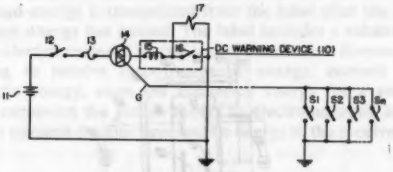
A magnetic holddown system for providing at selected times a magnetic holddown of a magnetic disc wherein the disc includes a ring of magnetic material and wherein the disc is to be held on a spindle assembly in a magnetic disc recording and reproducing system. The spindle assembly includes a central spindle, a rim member and an interconnecting web portion and with the web portion including magnetic sections spaced apart by a nonmagnetic section. A stationary electromagnet is located below the spindle assembly and provides when energized a magnetic field to pass through the magnetic sections of the web portion to interact with the ring of magnetic material which is part of the magnetic disc to hold the magnetic disc against the spindle assembly. The stationary electromagnet is always energized when the motor driving the spindle assembly is energized. The stationary electromagnet is energized for a predetermined period of time after the motor driving the spindle assembly is de-energized and the stationary electromagnet is energized for a predetermined period of time when power is applied to the system but before the motor driving the spindle assembly is energized.

3,706,086
SOLID STATE SCANNER FOR A REMOTE METER READING SYSTEM
Richard G. Farnsworth, York, Maine, assignor to General Electric Company
Filed July 22, 1971, Ser. No. 165,279
Int. Cl. G08c 15/00, 19/16
U.S. Cl. 340—180 7 Claims



An electronic scanner for a remote meter reading system, comprising, a plurality of gating devices each controlled by a counter and each adapted to sequentially connect individual meter monitoring data sources at a remote station to a remote station transmitter in response to a control signal from a central station. The electronic scanner further comprises a reset unit which is operated in response to the control signal to set the counter into a predetermined state such that the electronic scanner always begins operation with a predetermined data source.

3,706,087
ALARM LATCHING CIRCUIT
Charles Berns, Brookfield, Conn., assignor to Edwards Company, Inc., Norwalk, Conn.
Filed Feb. 19, 1971, Ser. No. 116,993
Int. Cl. G08b 3/10
U.S. Cl. 340—213 R 3 Claims



A remote control circuit for a D.C. actuated alarm apparatus has been provided which includes a coil, an armature actuated in response to energization of the coil, a normally closed set of spring biased breaker points serially coupled to the coil and opened by the actuation of the armature. An impedance bridges the points for maintaining circuit continuity regardless of the condition of the

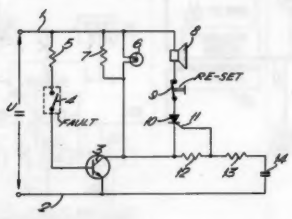
points. An alarm condition sensing means completes the circuit in response to the alarm condition. A normally non-conductive triac semi-conductor has its main conduction path serially coupled with the coil and its gate electrode coupled to the alarm condition sensing device for triggering conduction of the triac and actuating the coil in response to said circuit completion.

3,706,088

SWITCHING MEANS FOR AN ALARM SYSTEM

Aage Hojgaard Jorgensen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed June 28, 1971, Ser. No. 157,109
Claims priority, application Germany, Aug. 8, 1970, P 20 39 532.8
Int. Cl. G08b *21/00*
U.S. Cl. 340—248 R **5 Claims**



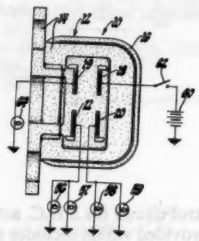
The invention relates to an alarm system switching arrangement in which a transistor is switched on by a fault sensing or response switch in the base circuit. A first circuit branch in series with the transistor contains an alarm device, a hand operated switch and a controllable rectifier. A storage capacitor is connected to the rectifier control terminal and a capacitor charging branch is in parallel with said first circuit branch. The hand operated switch may be momentarily actuated to turn off the alarm device but this does not interfere with the resetting of the circuit after the sensed fault has been eliminated by reason of the capacitor being rechargeable through the parallel branch charging line.

3,706,089

LAMP FAILURE INDICATOR

Gerald O. Huntzinger and Norris J. Bassett, Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 7, 1971, Ser. No. 178,256
Int. Cl. G08b *21/00*; H01h *61/04*
U.S. Cl. 340—253 N **3 Claims**



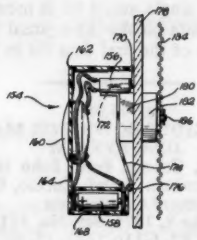
Apparatus for indicating when one of several electrical loads has ceased to draw current. Certain loads are energized through a first bimetal member and other loads are energized through a second bimetal member, the members being positioned so thermal forces generated therein move them in opposite directions. An insulating spacer member connecting the movable sections of the bimetal members prevents their movement until the forces become unequal. The bimetal members then move in the same direction until the one in which the greatest force is generated engages a contact member connected to an indicator device. Current drawn by the device tends to facilitate the electrical connection with the contact member.

3,706,090

BURGLAR ALARM TRIGGERED BY BREAKING OF A MAGNETIC CIRCUIT

James I. Callaghan, 11229 Camarillo St., North Hollywood, Calif.

Filed Oct. 12, 1970, Ser. No. 79,832
Int. Cl. G08b *13/08*
U.S. Cl. 340—274 **17 Claims**



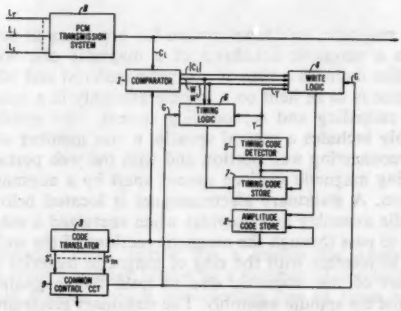
A burglar alarm for use on a window in which the alarm is triggered by breaking of a magnetic circuit across the window. The magnetic circuit is defined by a pair of movable bar magnets carried on opposite sides of the window. One bar magnet is carried by a window screen or other movable member which when displaced carries it away from the window to break the magnetic circuit. The other bar magnet then moves to close an electrical alarm circuit.

3,706,091

DIGITAL THRESHOLD DETECTOR

Carl Jerome May, Jr., Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 4, 1970, Ser. No. 69,752
Int. Cl. H04l *3/00*
U.S. Cl. 340—347 DD **12 Claims**



A method of, and circuitry for, converting PCM code groups generated by sampling the analogue signal level on a line into a set of signals representing discrete analogue

amplitude levels present in the sampled signal is disclosed. Each newly generated code group is applied to a comparator which compares its absolute value with a stored code. The stored code is simultaneously applied to a code translator which converts it into a set of discrete amplitude signals. When the comparison indicates that a selected relation has existed between the code groups generated by samples of the line and the stored code for a selected interval, the current code group replaces the stored code to indicate the changes in signal magnitude on the sampled line.

3,706,092

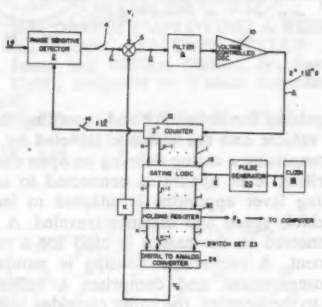
ELECTRONIC INSTRUMENT SERVO

Duncan B. Cox, Jr., Manchester, and Kenneth Fertig, Brookline, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of abandoned application Ser. No. 764,505, Oct. 2, 1968. This application Apr. 21, 1971, Ser. No. 136,231

Int. Cl. H03k *13/20*

U.S. Cl. 340—347 AD **1 Claim**



An electronic instrument servo for continually measuring a differential in a received input signal, whether modulated or unmodulated, and generating an instantaneous, synchronous, encoded output proportional to the measured differential. The servo basically comprises a feedback loop which generates a tracking signal differing in phase from a reference in proportion to the measured differential, and apparatus for reading out (strobing) the content of the loop at very precise time intervals relative to the reference, thereby generating an instantaneous and synchronous encoding of the phase angle of the tracking signal.

ERRATUM

For Class 343—7 see:
Patent No. 3,705,936

3,706,093

RANGE FINDER

Hans Staeudle, Heidenheim-Schnaitheim, Germany, assignor to Carl Zeiss Stiftung, doing business as Carl Zeiss, Wurttemberg, Germany

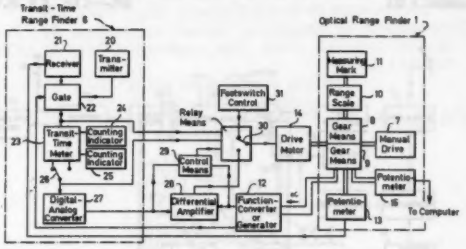
Filed June 1, 1970, Ser. No. 42,143

Claims priority, application Germany, June 3, 1969, P 19 28 274.7

Int. Cl. G01c *3/08*; G01s *9/00*

U.S. Cl. 343—6 R **13 Claims**

The invention contemplates coordinated optical and echo-ranging range finders on the same directional alignment whereby echo-range data may be available to improve the range setting of the optical range finder, for high-quality ranging in the presence of masking objects. Conversely, the improved resolution achieved by visual ranging can be utilized to up-grade the selection of the



particular echo (among a spread of masking echoes) for which a range determination is to be measured by the echo-ranging range finder. Various specific coordinating relationships are described for the two range finders.

3,706,094

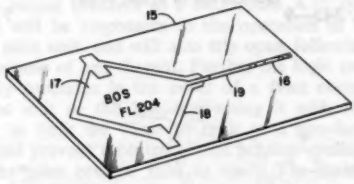
ELECTRONIC SURVEILLANCE SYSTEM

Peter Harold Cole, 103 Strangways Terrace, N., Adelaide, and Richard Vaughan, 6 Taylor St., Sydney, New South Wales, both of Australia

Filed Feb. 26, 1970, Ser. No. 14,607

Int. Cl. G01s *9/56*

U.S. Cl. 343—6.5 SS **27 Claims**



A passive label is interrogated by transmitting electromagnetic energy to the label and receiving electromagnetic energy from the label. Time delay means are provided in the label, preferably by utilization of surface acoustic waves, so that the returned energy is transmitted from the label after the interrogation energy has ceased. The label includes a substrate of piezo-electric material having coded information thereon, and serving to receive electromagnetic energy, convert it to acoustic energy, store the converted energy for a suitable time, reconvert the stored energy to electromagnetic energy and to transmit the electromagnetic energy to the receiver.

3,706,095

SIGNAL PROCESSOR

Roland A. Cherwek, Lynnfield, Mass., assignor to Raytheon Company, Lexington, Mass.

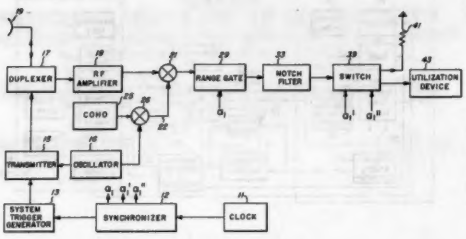
Filed Nov. 23, 1970, Ser. No. 91,723

Int. Cl. G01s *9/42*

U.S. Cl. 343—7.7 **4 Claims**

A signal processor wherein both desired and undesired signals are processed simultaneously to improve the ratio between the energy of the desired signals to the energy

of the undesired signals. All signals being processed during a selected period of time are passed first through a filter wherein the frequency spectrum of the undesired signals is materially changed and the frequency spectrum of the desired signals is but slightly changed. The material change in the frequency spectrum of the undesired signals, in addition to reducing the energy of the undesired



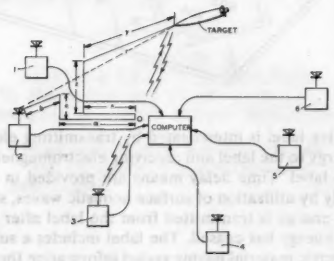
signals, engenders transients at the beginning and end of the selected period of time. Such transients are diverted to a dummy load along with a relatively small amount of the desired signals. The switch is also operative to pass the remaining steady state portion of both the desired signals and the remanent of the undesired signals to a utilization device.

3,706,096

POLYSTATION DOPPLER SYSTEM TRACKING OF VEHICLES, MEASURING DISPLACEMENT AND RATE THEREOF AND SIMILAR APPLICATIONS

Calvin Miles Hammack, P.O. Box 304, Saratoga, Calif. 95070

Filed Feb. 2, 1961, Ser. No. 86,770
Int. Cl. G01s 9/04, 9/44
U.S. Cl. 343—9 **7 Claims**



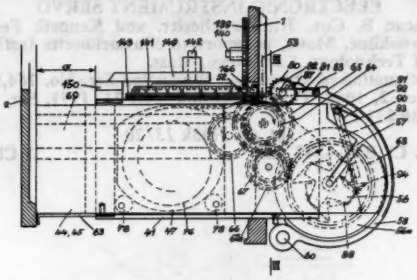
2. A method for the determination of the position of a moving object without knowledge of or reference to the type of path followed by the moving object or the forces acting on the object or knowledge of any previous point occupied by the object, comprising the steps of identifying each of a plurality of fixed points in space determining simultaneously the instantaneous value of the component of velocity of the moving object in the direction of each of a number of fixed points such that the otherwise unknown and unbounded position of the moving object is uniquely defined by said determinations and the known parameters related thereto and calculating the position of said moving object in orthogonal coordinates relative to said identified fixed points.

3,706,097

APPARATUS FOR INDICATING AND RECORDING THE SPEED OF MOTOR VEHICLES AND THE DISTANCE TRAVELED THEREWITH

Alfons Bauer, Bad Reichenhall, Germany (% Dipl.-Ing. A. Berglein, 49 Widenmayerstr., 8 Munich 22, Germany)

Filed May 23, 1969, Ser. No. 827,425
Claims priority, application Austria, May 30, 1968, A 5,181/68
Int. Cl. G01d 9/00
U.S. Cl. 346—18 **10 Claims**



An apparatus for indicating and recording the speed of a motor vehicle and the distance traveled by the motor vehicle comprising a casing defining an open compartment and a writing lever apparatus connected to said casing. The writing lever apparatus is adapted to indicate and record vehicle speed and distance traveled. A clockwork drive connected to the casing is used for a record strip advancement. A removable housing is mounted in the casing compartment and comprises a roller cartridge mounted to the housing, the roller cartridge being adapted to hold a record strip and defining an outlet slot for the record strip end. A transporting cylinder and a wind-up spool are rotatably mounted to the housing in series connection, the transporting cylinder being in rotatable cooperation with the clockwork drive and the wind-up spool. A pulling out apparatus for the record strip end is in cooperation with the transporting cylinder and is adapted to automatically pull the record strip end forward during insertion of the housing into the casing. A catching apparatus for the record strip end cooperates with the wind-up spool and is automatically adapted to connect the record strip end with the wind-up spool after a certain advance movement of the record strip.

3,706,098

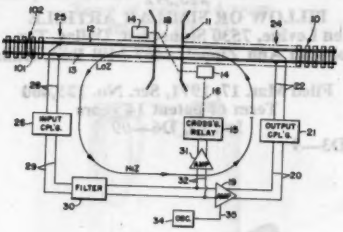
RAILWAY SIGNAL SYSTEM

Willard L. Geiger, Chagrin Falls, Ohio, assignor to Erico Products, Inc., Cleveland, Ohio

Filed Oct. 23, 1970, Ser. No. 83,512
Int. Cl. B61l 21/06
U.S. Cl. 246—40 **6 Claims**

A railway crossing signaling system in which an audio frequency signal coupled into the tracks is affected by the presence of a train near the crossing location and utilized to control operation of a conventional crossing signal relay. A relatively high impedance amplifier is transformer coupled to a section of the tracks, the latter acting as a part of a low impedance feedback path to cause oscillations at a fixed frequency determined by a high Q resonant reed filter. In preferred embodiments of the invention, oscillation is sustained via either direct connection of the feedback loop or connection through the tracks and interrupted by the shunting effect of the train, however, one embodiment of the invention

relies on the presence of a train to complete the feedback circuit to produce oscillation. In all embodiments of the invention a relatively low frequency high power signal is impressed



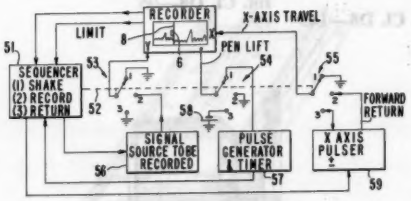
upon the track circuit through the common amplifier both to enhance oscillation and to cause frittering or establishment of the track circuit in spite of surface contamination and the like.

3,706,099

GRAPHIC RECORDER EMPLOYING A RESERVOIR LETTERING PEN TYPE STYLUS

Robert C. Jones and William Siebert, Jr., Santa Clara County, Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Dec. 14, 1970, Ser. No. 97,634
Int. Cl. G01d *15/16*
U.S. Cl. 346—140 4 Claims



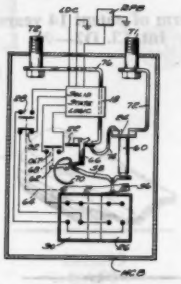
A graphic recorder employing a reservoir lettering pen type stylus is disclosed. The stylus includes a reservoir for ink interconnected to the stylus by means of an ink passageway. A movable and weighted cleaning plunger is disposed in the ink passageway for unclogging the pen. A motorized pen shaker, responsive to a train of pulses, shakes the pen prior to the recording phase of the operating cycle of the recorder to assure that the pen will write. A sequencer or programmed general purpose computer sequences the shaking of the pen.

3,706,100

REMOTE CONTROL CIRCUIT BREAKER SYSTEM

Werner B. Halbeck, Cedarburg, John A. Quaal, Wauwatosa, Clyde F. Robbins, Milwaukee, and Walter L. Rutchik, Wauwatosa, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Jan. 19, 1972, Ser. No. 218,956
Int. Cl. H02b *1/00*
U.S. Cl. 317—58 10 Claims



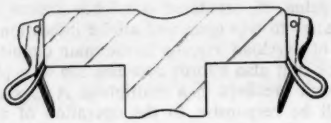
A remote control circuit breaker system in which an electronic logic unit is built into a main electromagnetically operated circuit breaker to act as the controlling interface between the latter and a remotely located pilot control-circuit breaker unit. In addition to directing main circuit breaker operation to provide closing and opening of the same in correspondence with the operation of the pilot unit, the logic unit responds on overload trip open of the main circuit breaker to subject the pilot unit to a controlled value of simulated overload current as will cause the latter to trip open and afford indication of the occurrence of overload tripping in the main circuit breaker. The logic unit also affords coordination of a plurality of such circuit breakers in a multiphase A.C. system so that all will be responsive to the operation of a single remote pilot unit, and will also trip open following overload response of any thereof. Further the logic unit automatically functions in the event of a fault occurring in the pilot unit or the line connecting it with the main breaker to limit the value of fault to a non-destructive value, and prevent repeated circuit breaker cycling in the event the pilot breaker fails to open. The main circuit breaker uses double-break contacts and permanent magnet latching to improve its arc rupture withstandability and eliminate the necessity of continuous energization of its electromagnetic operating coils. The overload trip mechanism in the main circuit breaker uses a low friction latch, and together with ambient temperature compensation in the bimetal latch release enhances the trip point precision.

DESIGNS

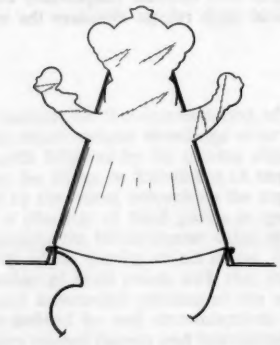
DECEMBER 12, 1972

225,389
WRISTLET FOR A BOWLER
Donald J. Carter, Tarzana, Calif., assignor of a fractional part interest to Frank Esposito, Eagle Pass, Tex.
Continuation of abandoned design application Ser. No. 16,744, Apr. 14, 1969. This application May 8, 1970, Ser. No. 22,533
Term of patent 14 years
Int. Cl. D2—*99*
U.S. Cl. D2—27

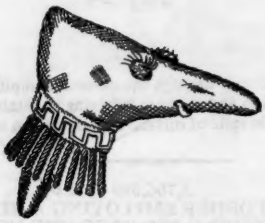
225,390
LIGHT REFLECTING MIRROR FOR VISIBILITY AID
Jibu Hori, 87, 2-chome Tozukamachi, Shinjuku-ku, Tokyo, Japan
Filed Jan. 29, 1971, Ser. No. 110,861
Claims priority, application Japan Aug. 13, 1970
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—234



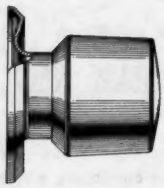
225,391
CONE CAP
Alberto Birlain Schafler, Amsterdam 218-201, Mexico City, Mexico
Filed Jan. 14, 1971, Ser. No. 106,638
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—250



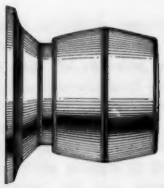
225,392
PILLOW OR SIMILAR ARTICLE
Linda Ellen Levine, 7530 Stonecrest, Dallas, Tex. 75240, and Deborah Ann Zippel, 4407 Mill Run, Dallas, Tex. 75234
Filed Mar. 17, 1971, Ser. No. 125,460
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D3—9



225,393
COMBINED DOOR KNOB AND ROSE
Nicholas Giandomenico, West Covina, Calif., assignor to Acme General Corporation, Monrovia, Calif.
Filed Mar. 5, 1971, Ser. No. 121,624
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—143



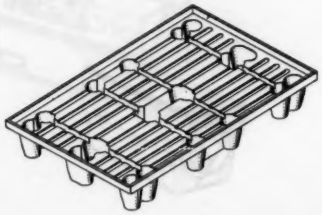
225,394
COMBINED DOOR KNOB AND ROSE
Nicholas Giandomenico, West Covina, Calif., assignor to Acme General Corporation, Monrovia, Calif.
Filed Mar. 5, 1971, Ser. No. 121,625
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—143



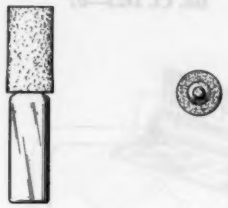
225,395
COMBINED JUG AND CAP THEREFOR
Albert Jacob, Paris, France (% Colgate-Palmolive Company, 300 Park Ave., New York, N.Y. 10022)
Filed Nov. 2, 1971, Ser. No. 195,063
Claims priority, application France June 1, 1971
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40

225,396
EXTRUDED PLASTIC TRACK FOR A WINDOW UNIT
Dominique Dallaire and Raymond M. Dallaire, St. David, Quebec, Canada, assignors to P. H. Plastics Inc., Lauzon, Quebec, Canada
Filed Jan. 13, 1971, Ser. No. 106,302
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6

225,397
PALLET
Donald C. Lindley, William W. Kinzie, and Gary L. Runyan, Tulsa, Okla., assignors to Rotec, Inc., Tulsa, Okla.
Filed May 12, 1971, Ser. No. 142,703
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—3

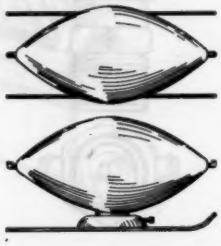


225,398
MEDICAL REAGENT BOTTLE
Clarence J. David, Belle Mead, N.J., assignor to Ortho Pharmaceutical Corporation
Filed Jan. 10, 1969, Ser. No. 15,306
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D16—1

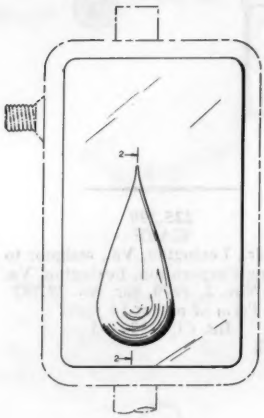


225,399
GAFF
Hugh R. Bolen, Jr., Lexington, Va., assignor to Magnetic Forming Corporation, Lexington, Va.
Filed Nov. 2, 1970, Ser. No. 25,792
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22

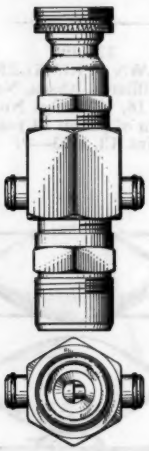
225,400
LAWN SPRINKLER
Richard R. Williams, Ithaca, Nebr. 68033
Filed Mar. 18, 1971, Ser. No. 125,912
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—7



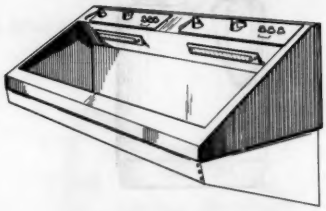
225,401
COVER PANEL FOR A WATER CONDITIONER CABINET
John H. Horn, Erie, Pa., assignor to Uniflow Manufacturing Company, Erie, Pa.
Continuation-in-part of design application Ser. No. 17,517, June 4, 1969. This application Dec. 14, 1970, Ser. No. 26,448
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



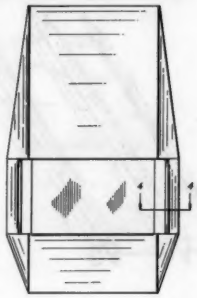
225,402
COMBINED VALVE AND AERATOR FOR FAUCETS
Sol N. Koblick, 41 Susan Drive, New City, N.Y. 10956
Filed Oct. 21, 1970, Ser. No. 25,583
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—20



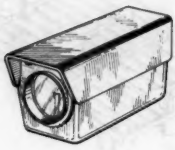
225,403
SURGEON'S SCRUB SINK
Thomas Brendgord, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.
Filed Aug. 18, 1970, Ser. No. 24,558
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



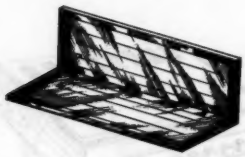
225,404
ENCLOSURE FOR WALL MOUNTED FIREPLACE
Harold N. Minick, Marshall, Mich., assignor to Leigh Products, Inc., Coopersville, Mich.
Filed May 25, 1971, Ser. No. 146,859
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—94

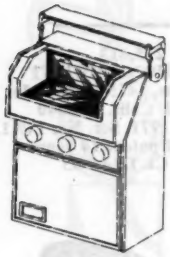


225,405
RADIANT ENERGY DETECTOR
Donald M. Szeles, Ann Arbor, Mich., assignor to Sensors, Inc.
Filed Mar. 2, 1971, Ser. No. 120,377
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D26—1

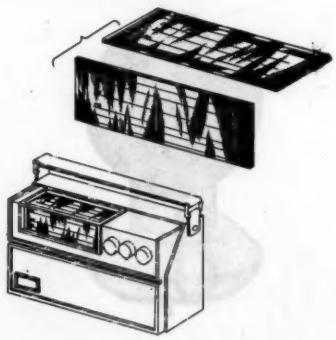


225,406
RADIO TUNING INDICATOR FACE PLATE
Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed Mar. 12, 1971, Ser. No. 123,927
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—1

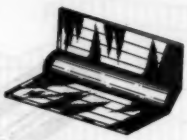


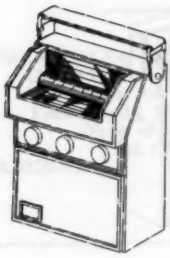


225,407
TRANSVERSE RADIO TUNING INDICATOR FACE PLATE
Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed Mar. 12, 1971, Ser. No. 123,928
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—1

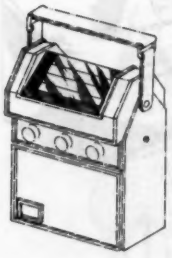


225,408
COMBINED RADIO TUNING INDICATOR AND MAGNIFIER
Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed Mar. 12, 1971, Ser. No. 123,940
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—1

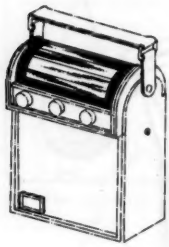




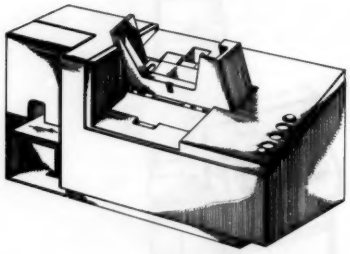
225,409
ANGULAR TUNING INDICATOR FACEPLATE
Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed May 18, 1971, Ser. No. 144,701
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—1



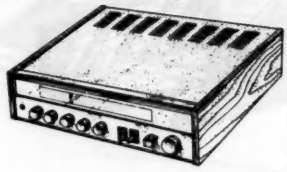
225,410
ARCUATE RADIO TUNING INDICATOR FACEPLATE
Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed May 18, 1971, Ser. No. 144,708
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—1



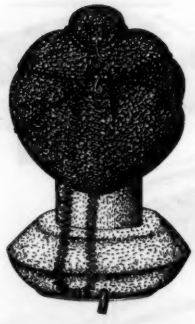
225,411
CARD READER OR SIMILAR ARTICLE
Robert B. Chaffee, Boston, Mass., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Sept. 1, 1970, Ser. No. 24,791
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



225,412
AMPLIFIER
Hiroaki Yazawa, Yamatokoriyama, and Yoshiaki Iida, Neyagawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Oaza-Kadoma, Kadoma-shi, Osaka, Japan
Filed Apr. 6, 1971, Ser. No. 131,840
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



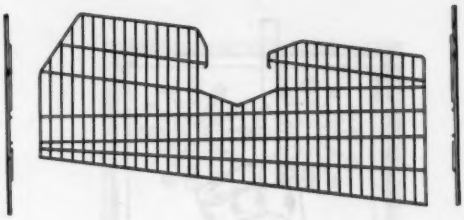
225,413
TELEPHONE MOUNT
Allen W. Scoggins, 1415 S. Rita Mae Ave., Merced, Calif. 95340
Filed June 1, 1971, Ser. No. 149,119
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



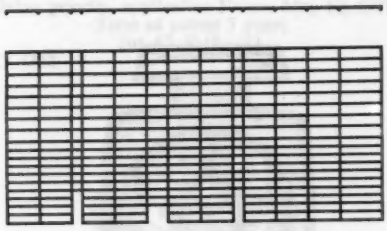
225,414
SCULPTURE
Nelda H. Brandenburger, 1555 13th Ave., Sacramento, Calif. 95818
Filed Dec. 17, 1971, Ser. No. 209,508
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23

225,415
TROPHY OR SIMILAR ARTICLE
Dorothy J. Baughan, Royal Oak, Mich., assignor to Woodrow W. Baughan, Royal Oak, Mich., and Anthony V. Sorci, Tonawanda, N.Y.
Filed Oct. 9, 1970, Ser. No. 25,407
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D29—28

225,416
LAYING CAGE DIVIDER
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Filed Mar. 1, 1971, Ser. No. 119,980
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—1



225,417
WIRE MESH PANEL FOR POULTRY CAGES
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Filed May 14, 1971, Ser. No. 143,733
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2

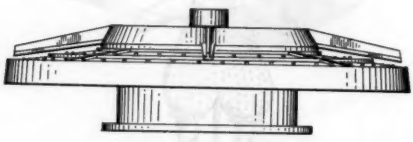


225,418
DOLL
Phyllis J. Reed, 502 Q St., Bedford, Ind. 47421
Filed Jan. 20, 1971, Ser. No. 108,237
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4

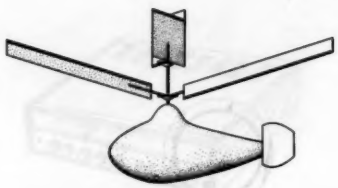
225,419
GOLF CLUB
Truett P. Mills, 1700 2nd Ave., Tuscaloosa, Ala. 35401
Filed Sept. 23, 1970, Ser. No. 25,155
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5

225,420
DART BOARD
Dennis G. Wyman, Owings Mills, and Marnie C. Averitt, Timonium, Md., assignors to Granta Corporation, Baltimore, Md.
Filed Mar. 1, 1971, Ser. No. 119,991
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—5

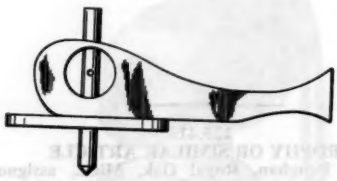
225,421
ROTATABLE PLAYING BOARD FOR TABLE GAME OR SIMILAR ARTICLE
Harry Zelenko, 150 E. 61st St., New York, N.Y. 10021
Filed June 1, 1971, Ser. No. 149,129
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



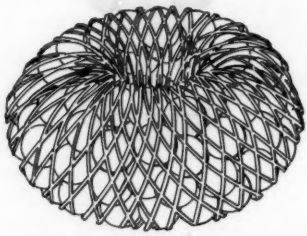
225,422
HELICOPTER KITE
Benjamin F. Richardson, Hebron, Ky., assignor to Aeropro Enterprises, Inc., Cincinnati, Ohio
Filed Feb. 12, 1971, Ser. No. 115,152
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



225,423
COMBINED TOY TOP AND HANDLE
Marvin W. Tanis, 2331 38th St. SW., and Richard A. Kwekel 2325 38th St. SW., both of Wyoming, Mich. 49509
Filed Mar. 22, 1971, Ser. No. 127,059
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



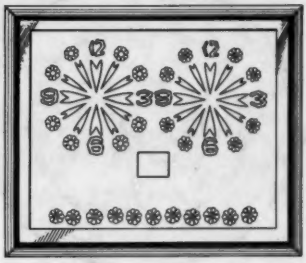
225,424
HOLDER FOR FLOWER STEMS OR THE LIKE
Lawrence E. Green, Stinson Beach, and William G. McDermott, Sausalito, Calif., assignors to McDermott & Green, Inc., San Francisco, Calif.
Filed Jan. 5, 1972, Ser. No. 215,705
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3



225,425
PUZZLE OR SIMILAR ARTICLE
Jane L. Brown, 1360 W. Granada Court, Ontario, Calif. 91762
Filed May 27, 1971, Ser. No. 147,728
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

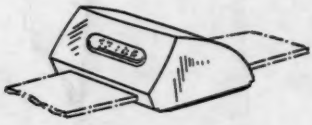
225,426
COVER PIECE FOR A WRISTWATCH
Francois de Baschmakoff, Fontainebleau, France, assignor to Lip Societe Anonyme d'Horlogerie, Besancon-Palente, France
Filed Nov. 12, 1970, Ser. No. 25,938
Claims priority, application France May 13, 1970
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D42—1

225,427
HOUSING FOR A CLOCK
William R. Lindner, 4105 Feidler Drive, Erie, Pa. 16506
Filed June 9, 1970, Ser. No. 23,405
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7



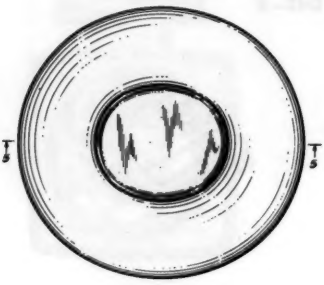
225,428
WATCHCASE
Francois de Baschmakoff, Fontainebleau, France, assignor to Lip Societe Anonyme d'Horlogerie, Besancon-Palente, France
Filed Nov. 12, 1970, Ser. No. 25,950
Claims priority, application France May 13, 1970
Term of patent 7 years
Int. Cl. D10—*02*
U.S. Cl. D42—8

225,429
WRISTWATCH
Gaston Vuilleumier, Le Landeron, Switzerland, assignor to Ebauches Electroniques S.A., Marin, Neuchatel, Switzerland
Filed Feb. 18, 1971, Ser. No. 116,749
Claims priority, application Switzerland Sept. 14, 1970
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D42—8



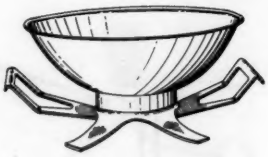
225,430
PLATE
Gerald Gulotta, New City, N.Y., assignor to Block China Corporation, New York, N.Y.
Filed Dec. 16, 1970, Ser. No. 26,528
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15

225,431
SAUCER
Gerald Gulotta, New City, N.Y., assignor to Block China Corporation, New York, N.Y.
Filed Dec. 16, 1970, Ser. No. 26,529
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—9

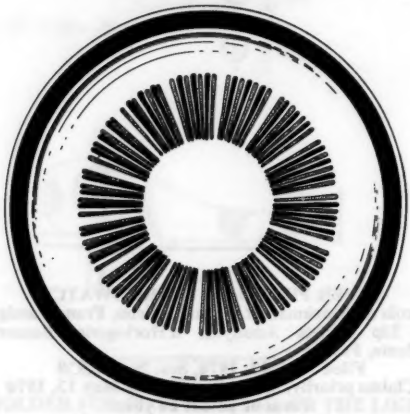


225,432
CUP
Gerald Gulotta, New City, N.Y., assignor to Block China Corporation, New York, N.Y.
Filed Dec. 16, 1970, Ser. No. 26,530
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—9

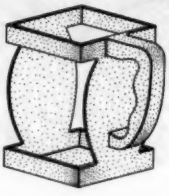
225,433
COOKING VESSEL
Gordon T. Rosenlund, Savage, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 14, 1970, Ser. No. 26,493
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—15



225,434
DINNER PLATE OR SIMILAR ARTICLE
Raymond T. Cleeland, Freehold, N.J., assignor to American Home Products Corporation, New York, N.Y.
Filed Aug. 13, 1971, Ser. No. 171,805
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15

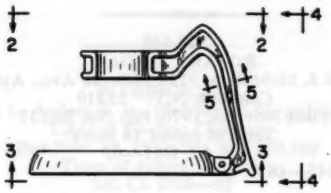


225,435
MILK CARTON HOLDER
Benjamin G. Anthony, Conneaut, Ohio, assignor to Promotions International, Inc., Southfield, Mich.
Filed Mar. 12, 1971, Ser. No. 123,937
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—21

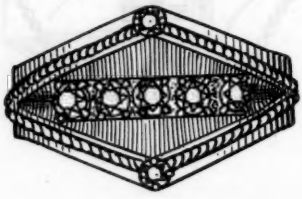


225,436
CARAFE
Delmas E. Collins, West Lafayette, Ohio, assignor to Jones-Zylon, Inc., West Lafayette, Ohio
Filed May 27, 1971, Ser. No. 147,717
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—21

225,437
DETACHABLE HANDLE FOR A DECANTER OR SIMILAR ARTICLE
Daniel L. Killigrew, Jr., Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Apr. 26, 1971, Ser. No. 137,724
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—21

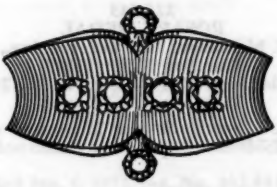


225,438
FINGER RING
Bernard I. Mechanic, 9314 Lincolnwood Drive, Evanston, Ill. 60202
Filed Jan. 22, 1971, Ser. No. 109,077
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10

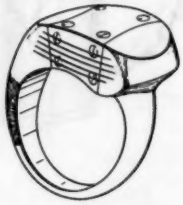


225,439
FINGER RING
Bernard I. Mechanic, 9314 Lincolnwood Drive, Evanston, Ill. 60202
Filed Jan. 22, 1971, Ser. No. 109,079
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10

225,440
FINGER RING
Bernard I. Mechanic, 9314 Lincolnwood Drive, Evanston, Ill. 60202
Filed Jan. 22, 1971, Ser. No. 109,080
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10

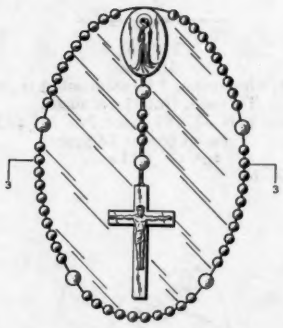


225,441
RING
Ronald A. Thompson, 7 Glazebrook Ave., Suite 5, Toronto, Ontario, Canada
Filed Feb. 22, 1971, Ser. No. 117,883
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10



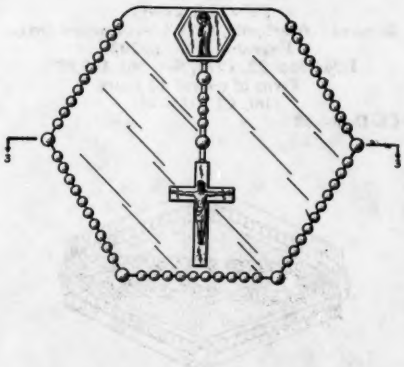
225,442
FINGER RING
Jacob Stein, 210 E. Broadway, New York, N.Y. 10002
Filed Feb. 22, 1971, Ser. No. 117,885
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10

225,443
ROSARY MEDAL
Raymond J. McMahon, 3185 Bellevue Ave., Apt. B–6, Camillus, N.Y. 13219
Filed Nov. 23, 1970, Ser. No. 26,129
Term of patent 14 years
Int. Cl. D11—*03*
U.S. Cl. D45—16



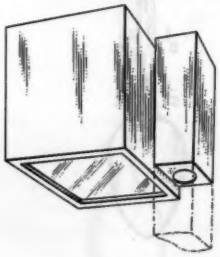
225,444
ROSARY MEDAL
Raymond J. McMahon, 3185 Bellevue Ave., Apt. B–6, Camillus, N.Y. 13219
Filed Nov. 23, 1970, Ser. No. 26,130
Term of patent 14 years
Int. Cl. D11—*03*
U.S. Cl. D45—16

225,445
ROSARY MEDAL
Raymond J. McMahon, 3185 Bellevue Ave., Apt. B–6, Camillus, N.Y. 13219
Filed Nov. 23, 1970, Ser. No. 26,131
Term of patent 14 years
Int. Cl. D11—*03*
U.S. Cl. D45—16



225,446
ROSARY MEDAL
Raymond J. McMahon, 3185 Bellevue Ave., Apt. B–6, Camillus, N.Y. 13219
Filed Nov. 23, 1970, Ser. No. 26,132
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—16

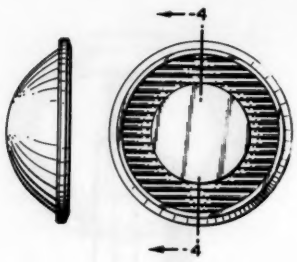
225,447
FLOODLIGHT
Eldon L. Anderson, Jr., Fletcher, N.C., assignor to General Electric Company
Filed Nov. 18, 1971, Ser. No. 200,269
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—20



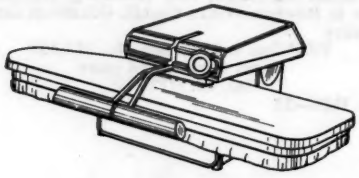
225,448
LIGHTER
Dieter Rams, Konigstein, Taunus, Germany, assignor to Braun AG, Frankfurt am Main, Germany
Filed July 17, 1970, Ser. No. 24,006
Claims priority, application Germany Feb. 17, 1970
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27

225,449
TABLE LIGHTER
Gotz Florian Strzelczyk, Bad Homburg, Germany, assignor to Rowenta-Werke GmbH, Offenbach am Main, Germany
Filed Jan. 4, 1971, Ser. No. 103,953
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27

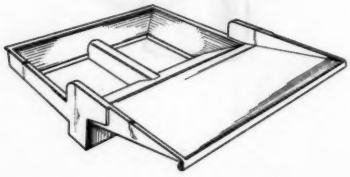
225,450
FLUTED PLANO-ASPHERIC LENS
Howard A. Schaefer, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Original design application Feb. 25, 1970, Ser. No. 21,604. Divided and this application Sept. 1, 1971, Ser. No. 177,199
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32



225,451
IRONING PRESS
Antonio Jimenez, Meyrin-Geneva, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland
Filed Feb. 19, 1971, Ser. No. 117,214
Claims priority, application Switzerland Sept. 2, 1970
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D49—1



225,452
TRASH RECEPTACLE HOPPER
Floyd R. Gladwin, 21000 E. River Road, Grosse Ille, Mich. 48138
Filed Apr. 15, 1971, Ser. No. 134,525
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D49—35



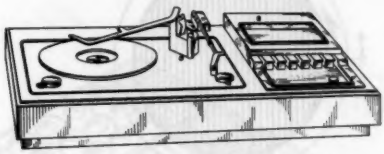
225,453
WALL THERMOSTAT
Frederick M. Hill, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio
Filed Apr. 29, 1971, Ser. No. 138,850
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—7

225,454
SPOON OR SIMILAR ARTICLE OF FLATWARE
Milton Gonshorek, Meriden, Conn., assignor to International Silver Company, Meriden, Conn.
Filed Nov. 19, 1971, Ser. No. 200,641
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

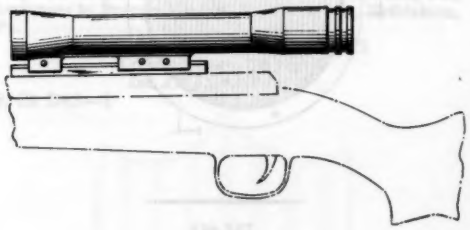
225,455
SPOON OF SIMILAR ARTICLE OF FLATWARE
William J. Knope, Meriden, Conn., assignor to International Silver Company, Meriden, Conn.
Filed Nov. 19, 1971, Ser. No. 200,642
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

225,456
SPOON OR SIMILAR ARTICLE
Frank R. Perry, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Dec. 29, 1971, Ser. No. 213,791
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12

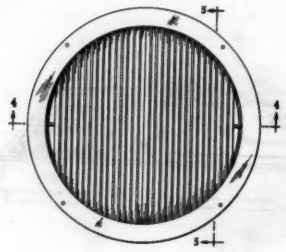
225,457
COMBINED PHONOGRAPH TURNTABLE, BASE, AND CASETTE PLAYER OR SIMILAR ARTICLE
Lawrence Levow, Huntington, N.Y., assignor to Harman-Kardon, Incorporated, Plainview, Long Island, N.Y.
Filed Oct. 15, 1969, Ser. No. 19,578
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4



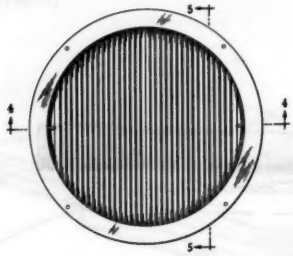
225,458
COMBINED TELESCOPIC SIGHT AND GUN MOUNTING
Rolf Heym, Kreis Kissingen, Coburger Strasse 8, Munnerstadt, Germany
Filed May 13, 1970, Ser. No. 22,953
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1



225,459
GRATED VAULT COVER
Emil A. Altobello, 555 Preston Ave., Meriden, Conn. 06450
Filed Apr. 19, 1971, Ser. No. 135,520
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D60—2

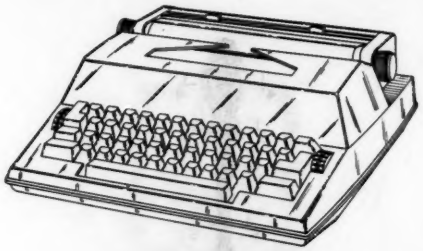


225,460
VAULT COVER GRATING
Emil A. Altobello, 555 Preston Ave., Meriden, Conn. 06450
Filed Apr. 19, 1971, Ser. No. 135,521
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D60—2

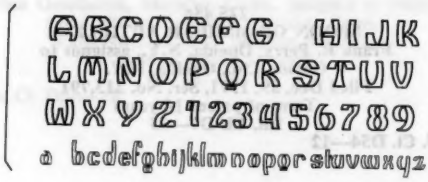


225,461
TYPEWRITER
William B. Sklaroff, Narberth, Pa., assignor to Litton Business Systems, Inc., New York, N.Y.
Filed Oct. 2, 1970, Ser. No. 25,309
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11

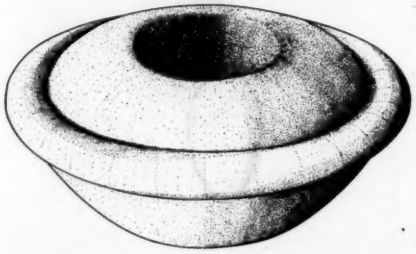
225,462
TYPEWRITER
Gerhard Dietrich, Furth, Bavaria, and Alfred Mamet, Nuremberg, Germany, assignors to Adlerwerke vorm. Heinrich Kleyer A.G., Frankfurt am Main, Germany
Filed Mar. 31, 1971, Ser. No. 130,065
Claims priority, application Germany Nov. 17, 1970
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11



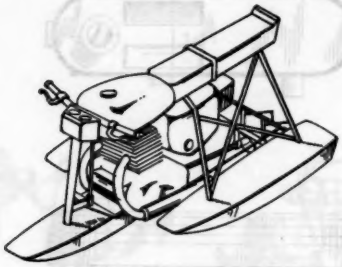
225,463
FONT OF TYPE
Charles R. Lee, 7228 Spruce Ave., Takoma Park, Md. 20012
Filed Dec. 24, 1970, Ser. No. 26,634
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12



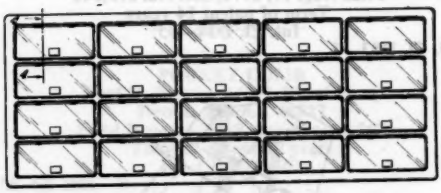
225,464
AERODYNAMIC DECELERATOR
William C. Alexander, Barberton, and Fred R. Nebiker, Akron, Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio
Filed Mar. 25, 1968, Ser. No. 11,133
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D71—1

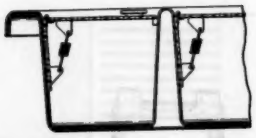


225,465
WATER VEHICLE
Lee G. Yutzler, 522 N. Matlock, Mesa, Ariz. 85203
Filed Mar. 2, 1971, Ser. No. 120,379
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D71—1



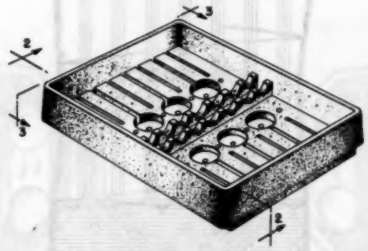
225,466
COMPARTMENTIZED MEDICINE TRAY FOR REST HOMES
Donald J. Miller, 2831 Bristol N. 25, Costa Mesa, Calif. 92626
Filed Jan. 29, 1971, Ser. No. 111,174
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D83—1



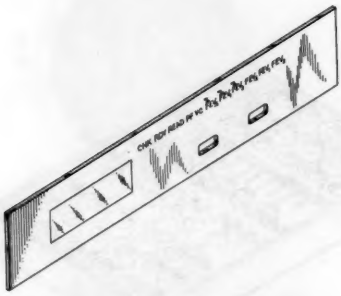


225,467
MEDICAL EQUIPMENT TRAY
George K. Burke and Kenneth Raines, Bethlehem, Pa., assignors to Burron Medical Products, Inc., Bethlehem, Pa.
Filed Feb. 3, 1971, Ser. No. 112,511
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D83—1

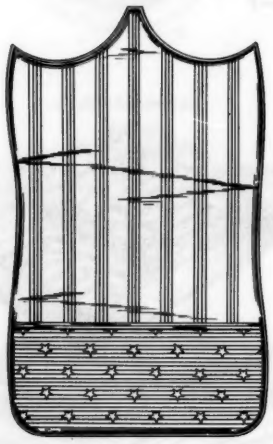
225,468
MEDICAL EQUIPMENT TRAY
George K. Burke and Kenneth Raines, Bethlehem, Pa., assignors to Burron Medical Products, Inc., Bethlehem, Pa.
Filed Feb. 3, 1971, Ser. No. 112,512
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D83—1



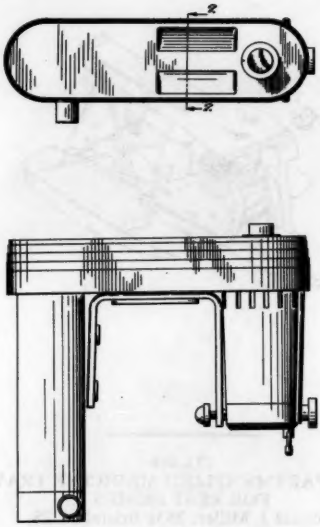
225,469
FACE PLATE FOR SPIROMETER MEDICAL APPARATUS
Bernard N. Gray, East Pepperell, and John W. Burke, Melrose, Mass., assignors to Life Support Equipment Corp., Burlington, Mass.
Filed Feb. 26, 1971, Ser. No. 119,443
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1



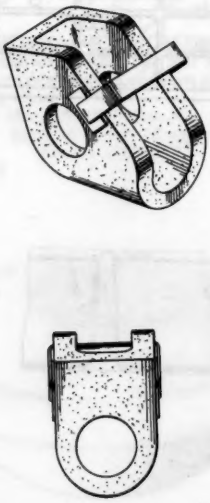
225,470
GARMENT BAG
Sidney Annis, 16 W. 16th St., New York, N.Y. 10011
Filed Mar. 8, 1971, Ser. No. 122,276
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



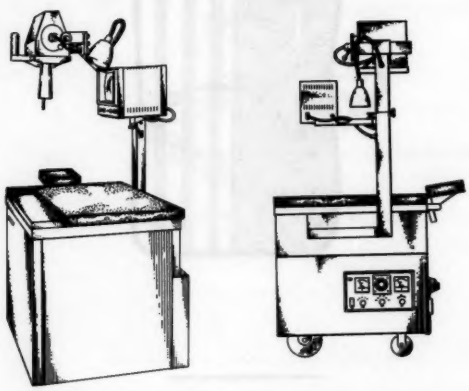
225,471
HYDROTHERAPY BATH UNIT
Samuel L. McNair, Overland Park, Kans., assignor to The Songrand Corporation
Filed Apr. 20, 1971, Ser. No. 134,112
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1



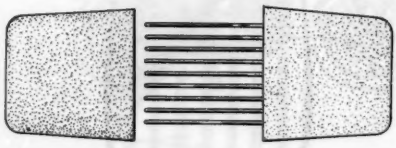
225,472
PROTECTIVE PAD FOR BED PATIENTS
Ernest E. Lowrey and Oliver W. Lowrey, Gatesville, Tex., assignors to Medical Plastics Laboratory, Inc., Gatesville, Tex.
Filed Aug. 19, 1971, Ser. No. 173,340
Term of patent 14 years
Int. Cl. D24—*05*
U.S. Cl. D83—1



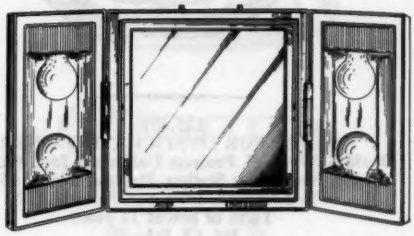
225,473
MOBILE FLUOROSCOPIC UNIT
Lewis S. Carey, 45 Blackbourn Crescent, Kilworth Heights, London, Ontario, Canada, and George L. Mansour, 8126 Stevens Ave., Minneapolis, Minn. 55420
Filed Oct. 13, 1971, Ser. No. 189,069
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1



225,474
POCKET COMB
Paul E. Brooks, 14351 Woodmont, Detroit, Mich. 48227
Filed Nov. 24, 1969, Ser. No. 20,262
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8

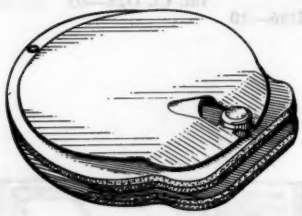


225,475
ILLUMINABLE ROTATABLE DOUBLE-FACED MIRROR
Stanford Pavenick, South Orange, N.J. (% Aljen Manufacturing Corp., 115 Grand St., New York, N.Y.)
Original design application Feb. 2, 1970, Ser. No. 21,189. Divided and this application Dec. 30, 1970, Ser. No. 26,709
Term of patent 7 years
Int. Cl. D28—*03*
U.S. Cl. D86—10

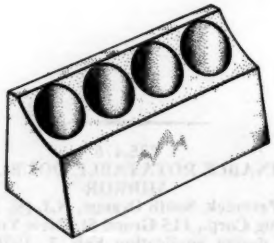


225,476
ILLUMINABLE ROTATABLE DOUBLE-FACED MIRROR
Stanford Pavenick, South Orange, N.J. (% Aljen Manufacturing Corp., 115 Grand St., New York, N.Y.)
Original design application Feb. 2, 1970, Ser. No. 21,189. Divided and this application Dec. 30, 1970, Ser. No. 26,710
Term of patent 7 years
Int. Cl. D28—*03*
U.S. Cl. D86—10

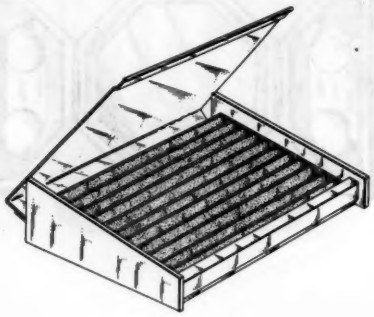
225,477
FINGERNAIL CLIPPER OR THE LIKE
Bernard M. Rock, 1311 York St., Denver, Colo. 80206
Filed Feb. 18, 1971, Ser. No. 116,740
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10



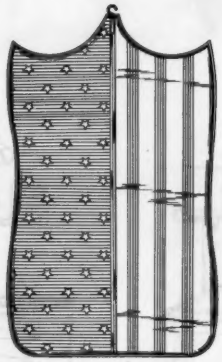
225,478
HOLDER FOR LIPSTICK CONTAINERS
David S. Wyse, % Projects Unlimited, Inc., P.O. Box 1426, Northridge Station, Dayton, Ohio 45414
Filed Apr. 16, 1971, Ser. No. 134,927
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D86—10



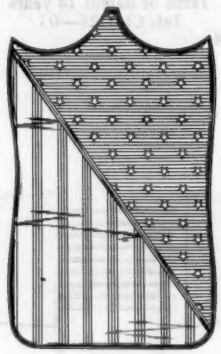
225,479
STORAGE CONTAINER FOR CASSETTES OR THE LIKE
Robert F. Zottola, 225 Greenwich Ave., Greenwich, Conn. 06830
Filed Jan. 21, 1971, Ser. No. 108,667
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1



225,480
GARMENT BAG
Sidney Annis, 16 W. 16th St., New York, N.Y. 10011
Filed Mar. 8, 1971, Ser. No. 122,277
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



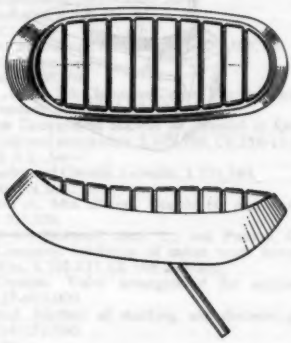
225,481
GARMENT BAG
Sidney Annis, 16 W. 16th St., New York, N.Y. 10011
Filed Mar. 8, 1971, Ser. No. 122,278
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



225,482
COMBINED HEAD AND FOOT GEAR CARRYING CASE
Michael W. Bamburger, 17 Wurzerstr., 8 Munich, Germany
Filed Aug. 18, 1970, Ser. No. 24,561
Claims priority, application Germany Feb. 20, 1970
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—5

225,483
MOTORCYCLE
Hitoshi Ikeda, 21 Nobidome Kamikitagawa, Niiza-machi, Kitaadachi-gun, and Kiyoshi Ukai, 3436 Fujimi-cho Mizuko, Iruma-gun, both of Saitama, Japan
Filed Mar. 22, 1971, Ser. No. 127,085
Claims priority, application Japan Sept. 22, 1970
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D90—8

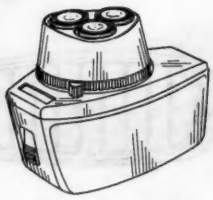
225,484
CYCLE SEAT
Frederick E. Purdy, Olney, Ill., assignor to AMF Incorporated
Filed May 24, 1971, Ser. No. 146,605
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—16



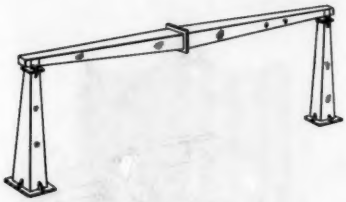
225,485
WITHDRAWN

225,486
DRINKING STRAW
Philip D. Bart, Monsey, N.Y. (3070 NE. 43rd St., Fort Lauderdale, Fla. 33306)
Filed Apr. 5, 1971, Ser. No. 131,582
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D94—3

225,487
COMBINED DRY SHAVER AND HAIR CLIPPER
Knut Otto Yran, Eindhoven, Netherlands, assignor to United States Philips Corporation
Filed June 16, 1971, Ser. No. 153,919
Claims priority, application Switzerland Dec. 21, 1970
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3



225,488
OVERHEAD SIGN SUPPORT
Clifton E. Jones, Flint, Mich., assignor to Anderson Safeway Guard Rail Corporation, Flint, Mich.
Filed June 7, 1971, Ser. No. 150,877
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. 96—12



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF DECEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A/S Fredriksstad mek. Verksted: *See*—
Wilhelmsen, Jens, 3,705,564.

Abbey, Nelson D.: *See*—
Vassar, Clyde W., 3,705,458.

Abbott Laboratories: *See*—
Garmaise, David Lyon; Paris, Gerard Yvon; and Plotnikoff, Nicholas Peter, 3,705,902.

Adler, Norman R., to Ilco Corporation. Panic lock device. 3,705,739, Cl. 292-92.000.

Aepli, Otto T.: *See*—
Sedliar, Ronald M.; Aepli, Otto T.; and Burkard, Perle N., 3,705,856.

Affiliated Hospital Products, Inc.: *See*—
Einstein, Alfred C., 3,705,724.

Agfa-Gevaert Aktiengesellschaft: *See*—
Lermann, Peter, 3,705,536.
Nittel, Fritz; Sobel, Johannes; and Himmelmann, Wolfgang, 3,705,805.
Putscher, Johann, 3,705,538.
Wagner, Karl; Nicolay, Klaus; Schuchardt, Gerhard; and Putscher, Johann, 3,705,539.

Agfa-Gevaert, Mortsel-Belgium: *See*—
De Schamphelaere, Lucien Amede, 3,705,978.

Ahmed, Kamal, to AMP Incorporated, mesne. Slip ring assembly. 3,705,996, Cl. 310-232.000.

Aichi Steel Works Limited: *See*—
Fukui, Hiroshi; Iwatsu, Gakuji; and Kato, Junichi, 3,705,718.

Air-Lock Plastic, Inc.: *See*—
Confer, Raymond C.; and Talmon, Floyd H., 3,705,931.

Aisin Seiki Kabushiki Kaisha: *See*—
Yoshimura, Noboru, 3,705,738.

Akatsu, Mitsuharu; Kinoshita, Tomoo; and Iwasaki, Tadahiko, to Hitachi, Ltd. High voltage regulating circuit. 3,706,003, Cl. 315-18.000.

Aksamit, Stephen M., to Standard Alliance Industries, Inc. Trolley retarder for power and free conveyors. 3,705,554, Cl. 104-250.000.

Aktiebolaget Svenska Metallverken: *See*—
Bergqvist, Ake Torgny, 3,705,647.

Alaimo, Robert J., to Morton-Norwich Products, Inc. Certain 4-amino-2-(5-nitro-2-thienyl) quinazolines and the intermediate 4-chloro-(5-nitro-2-thienyl) quinazolines therefor. 3,705,898, Cl. 260-247.100.

Allegre, Raymond: *See*—
Allegre, Rene; and Allegre, Raymond, 3,705,815.

Allegre, Rene; and Allegre, Raymond, to Societe Anonyme dite Ciments. Lime and silica-rich high alumina cement, and process for manufacturing same. 3,705,815, Cl. 106-104.000.

Allen, Charles R. Snap on drywall fastening system II. 3,705,471, Cl. 52-243.000.

Allied Chemical Corporation: *See*—
Garofano, Norman R.; and Follows, Alan G., 3,705,790.
Lazarus, Stanley David, 3,705,878.
Woolf, Cyril; Oxenrider, Bryce C.; and Beyleveld, Wilhelmus M., 3,705,917.

Alliegro, Richard A., to Norton Company. Silicon nitride kiln furniture. 3,705,714, Cl. 263-47.00r.

Allis Chalmers Manufacturing Company: *See*—
Goodman, Ernest A., 3,706,060.

Allis-Chalmers Manufacturing Company: *See*—
Pflanz, Herbert M., 3,706,012.

Allwood Searle & Timney Limited: *See*—
Searle, John Gilbert, 3,705,678.

Almstead, James L., to Eastman Kodak Company. Disengageable anti-backup mechanism for a film cartridge. 3,705,763, Cl. 352-78.00r.

Alouisa, Frank B., to United States of America, Army. Hybrid routing technique for switching communication network. 3,705,523, Cl. 179-18.0ea.

Alpert, Seymour B.; and Chervenak, Michael C., to Hydrocarbon Research, Inc. Fuel oil desulfurization. 3,705,849, Cl. 208-59.000.

Amann, Herbert; and Bader, Erich, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Method of making polyoxymethylenes. 3,705,876, Cl. 260-67.0fp.

Amano, Takashi: *See*—
Hanyu, Susumu; and Amano, Takashi, 3,705,562.

Ambrosius, Manfred, to Bremshey & Co. Vehicle seat. 3,705,745, Cl. 297-308.000.

American Cyanamid Company: *See*—
Dundon, John Peter, 3,705,822.
Levy, Stephen David; and Wayne, Richard Steven, 3,705,895.

American Gage & Machine Company: *See*—
Lulay, John R.; Marusarz, Bruno J.; and Mateja, Edward J., 3,705,721.

American Molded Products, Ltd.: *See*—
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American Potato Company: *See*—
Shields, John Bickford, 3,705,812.

American Safety Equipment Corporation: *See*—
Fujisawa, Masakatsu, 3,705,761.

AMP Domestic Inc.: *See*—
Keller, Joseph Richard; and Pritulsky, James, 3,705,756.

AMP Incorporated, mesne: *See*—
Ahmed, Kamal, 3,705,996.

Andreas, Henry L., to Sci-Tek Computer Center, Inc. Profile determining method and system. 3,705,772, Cl. 356-5.000.

Andriussi, Francois Georges, to Societe de Wendel et Compagnie. Safety rail for roads and motorways. 3,705,709, Cl. 256-13.100.

Anonima Castelli S.A.S.: *See*—
Piretti, Giancarlo; and Castelli, Leonida, 3,705,744.

Arc-Crose International, Inc.: *See*—
Clavin, Edward A.; McCullough, Donald H.; and McCullough, David R., 3,705,506.

Argabright, Perry A.; Hummel, Jack L.; and Presley, C. T., to Marathon Oil Company. Inhibition of saline water intrusion into fresh water aquifers. 3,705,627, Cl. 166-295.000.

Arisland, Kjell Oystein. Valve arrangement for suction tubes. 3,705,601, Cl. 137-493.000.

Arnemann, Gerhard. Method of stacking and destacking barrels. 3,705,657, Cl. 214-152.000.

Arneth, Reinhold: *See*—
Moraw, Roland; and Arneth, Reinhold, 3,705,768.

Arnosky, Joseph E.: *See*—
Balzer, Norbert R.; and Arnosky, Joseph E., 3,705,973.

Arnsteiner, Anton. Ski. 3,705,729, Cl. 280-11.13l.

Arvanitakis, Kostas Savas. Filtration system. 3,705,648, Cl. 210-66.000.

Arvanitakis, Kostas Savas. Desludger apparatus and process. 3,705,649, Cl. 210-66.000.

Asahi Chemical Industry Co., Ltd.: *See*—
Kato, Masaaki; and Sato, Sigeta, 3,705,846.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Ishikawa, Tatsuo; Hiruta, Shiro; Wakabayashi, Teruomi; Inamoto, Yoshihiko; Kusunose, Tethiro; Tsumaki, Tatsuichi; and Ota, Masami, 3,705,877.

Ashworth, James E., to United States Steel Corporation. Cantilever slide gate. 3,705,468, Cl. 49-409.000.

Associated Electrical Industries, Limited: *See*—
Davidson, David Fulton; and Irving, Brian Arthur, 3,705,735.

Assouline, George; Conjeaud, Pierre; Girault, Pierre; and Leiba, Eugene, to Thomson-CSF. Blind landing aid systems. 3,705,955, Cl. 178-6.800.

Atkinson, Louis D.: *See*—
Laakaniemi, Richard N.; Kuczkowki, Frank A.; Atkinson, Louis D.; Kuhar, Paul W.; Lechner, Thomas J., Jr.; and Weber, Urban A., 3,705,595.

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Atlantic Richfield Company: *See*—
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Audi NSV Auto-Union Aktiengesellschaft: *See*—
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Austin, Frederick H.; Rogers, Jimmy D.; and Wormser, Joseph J., to LTV Electrosystems, Inc. Pulse transmittor including means for controlling the amplitude and phase of output pulses. 3,706,038, Cl. 325-164.000.

Automated Feed Mills Limited: *See*—
Sandor, Bela Thomas, 3,705,695.

Autoquip Corporation: *See*—
Clarke, Dudley S.; and Camera, Jack, 3,705,987.

Avco Corporation: *See*—
Brandel, Wynand W.; and Klass, Lawrence S., 3,705,511.

Aya, Masahiro: *See*—
Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,705,929.

Azato, Robert N., to General Binding Corporation. Hanger hardware for a director. 3,705,706, Cl. 248-447.000.

Bader, Erich: *See*—
Amann, Herbert; and Bader, Erich, 3,705,876.

Badger Company, Inc., The: *See*—
Miller, George M.; and Underwood, Max E., 3,705,617.

Badrian, Willy H. J., to Shell Oil Company. Coated fabrics of thermoplastic materials. 3,705,835, Cl. 161-90.000.

Baer, Stephen Charles. Microscopy apparatus. 3,705,755, Cl. 350-6.000.

Bailey, Joseph, to Eastman Kodak Company. Pyrazolo [3,2-c]-s-triazoles and process for the manufacture thereof. 3,705,896, Cl. 260-240.00e.

Bailey Meter Company: *See—*
Cohen, Kenneth W.; and Martin, Thomas E., 3,705,535.

Baisupov, Izmail Abdulovich: *See—*
Vishnitsky, Alexandr Lazarevich; Shapiro, Lev Mironovich; Kazantsev, Evgeny Andreevich; Shvartsman, Benyamin Markovich; Shilov, Georgy Petrovich; Nemilov, Evgeny Fedorovich; Baisupov, Izmail Abdulovich; Masterov, Vasily Fomich; and Rumyantsev, Alexandr Steanovich, 3,705,848.

Baker, Randolph H.: *See—*
Knight, Chesterton S.; and Baker, Randolph H., 3,705,434.

Balkarei, Iosif Mikhailovich: *See—*
Podolsky, Viktor Grigorievich; Balkarei, Iosif Mikhailovich; and Grigoriyants, Sergei Mikhailovich, 3,705,702.

Ballantyne, Jack R.: *See—*
Wilmot, Richard D.; and Ballantyne, Jack R., 3,705,936.

Balzer, Norbert R.; and Arnosky, Joseph E., to Park-Ohio Industries, Inc. Resistance heating apparatus for elongated workpieces. 3,705,973, Cl. 219-156.000.

Banister, Lionel W. Electrical cord retracting mechanism. 3,705,962, Cl. 191-12.400.

Banker, Bernard R.: *See—*
Voigt, H. William, Jr.; and Banker, Bernard R., 3,705,828.

Bannister, Brian; and Magerlein, Barney J., to Upjohn Company, The. Lincomycin analogs and process. 3,705,889, Cl. 260-210.00r.

Banse, Karlheinz Victor Hermann; Seelig, Wolfgang Hagen; Steinger, Jurg Hugo; and Herziger, Gerd Bernd, to Institut fur Angewandte Physik der Universitat Bern. Gas discharge tube for a laser. 3,705,999, Cl. 313-197.000.

Bansen, Kurt. Broach assembly. 3,705,448, Cl. 29-95.100.

Baptista, John L., to Eastman Kodak Company. Novel photographic processing compositions and improved processing using such compositions for preparing silver auxiliary and sound records. 3,705,802, Cl. 96-4.000.

Barbato, Alexander L.; deceased (by Barbato, Patricia J.; executrix), to Diamond Shamrock Corporation. Float measuring device for mercury cells. 3,705,842, Cl. 204-99.000.

Barbato, Patricia J.: *See—*
Barbato, Alexander L., 3,705,842.

Barker, Sidney Alan; Kennedy, John Frederick; and Cray, Charles John, to Ranks Hovis McDougall Limited. Cellulose carbonates and method for their preparation. 3,705,890, Cl. 260-228.000.

Barnowski, Guilford Henry G., Jr.: *See—*
Clarke, Gail H., Jr.; and Barnowski, Guilford Henry G., Jr., 3,705,857.

Barrineau, Wade H., III, to Southern Cross Industries, Inc. Adjustable shelves and support therefor. 3,705,654, Cl. 211-176.000.

Bartl, Herbert: *See—*
Wingler, Frank; Brudermanns, Karola; and Bartl, Herbert, 3,705,883.

Barton, Derek Harold Richard, to Research Institute for Medicine and Chemistry Inc. Process for the 9(11)-enolisatin of a steriod 1,4-diene-3,11-dione. 3,705,893, Cl. 260-239.55d.

BASF Wyandotte Corporation: *See—*
Brizgys, Bernardas, 3,705,879.
Duvall, Jacque L., 3,705,860.
Sedliar, Ronald M.; Aepli, Otto T.; and Burkard, Perle N., 3,705,856.

Bassett, Norris J.: *See—*
Huntzinger, Gerald O.; and Bassett, Norris J., 3,706,089.

BAT-Cegaretten-Fabriken GmbH: *See—*
Heinz, Freiwald; and Karl-Heinz, Eggert, 3,705,568.

Baudras, Andre, to Societe Technique et Commercial d'Installations Industrielles "Luceat". Tank car loading unit. 3,705,610, Cl. 141-387.000.

Bauer, Alfons. Apparatus for indicating and recording the speed of motor vehicles and the distance travelled therewith. 3,706,097, Cl. 346-18.000.

Bauerle, Oskar; Kubel, Wilfried; Munster, Ernst; Schweikert, Karl; and Strobl, Georg. Commutator. 3,705,997, Cl. 310-237.000.

Baughman, Davis L., to Carborundum Company, The. Shot peening method. 3,705,510, Cl. 72-53.000.

Bayer Aktiengesellschaft: *See—*
Wingler, Frank; Brudermanns, Karola; and Bartl, Herbert, 3,705,883.

Bayne, Peter D.: *See—*
Krause, Ronald O.; and Bayne, Peter D., 3,705,597.

Beinsch, Herbert, to Bosch, Robert, Photokino GmbH. Motion picture camera for the making of exposures with fixed and variable exposure times. 3,705,764, Cl. 352-121.000.

Bell, Oliver A., Jr., to Colt Industries Operating Corporation. Cut-off protection system for electrical discharge machining power supply. 3,705,969, Cl. 219-69.00s.

Bell, Samuel; and Bullen, Leslie Gerald, to Electric & Musical Industries Limited. Mooring devices. 3,705,431, Cl. 9-8.00r.

Bell Telephone Laboratories, Inc.: *See—*
Dynes, Robert Carr; and Fulton, Theodore Alan, 3,706,064.

Bell Telephone Laboratories, Incorporated: *See—*
Bobeck, Andrew Henry; Kowalchuk, Roman; and Reekstin, John Peter, Jr., 3,706,081.
Bobeck, Andrew Henry; and Danylchuk, Irynej, 3,706,082.
Ippen, Erich Peter; Patel, Chandra Kumar Naranbhai; and Stolen, Rogers Hall, 3,705,992.
Lundgren, Carl William, Jr., 3,706,037.
May, Carl Jerome, Jr., 3,706,091.
Schuster, Paul Alfred, 3,706,076.
Seidel, Harold, 3,706,046.
Swanson, Richard Maurice, 3,705,959.

Bello, Hobson J.: *See—*
Bevis, Michael J.; Bello, Hobson J.; and Holtz, Carl F., 3,705,803.

Bello, Hobson J.; and Holtz, Carl F., to Eastman Kodak Company. Film and process using bleach inhibitor for producing color film with silver sound record. 3,705,799, Cl. 96-4.000.

Belu, Aretia: *See—*
Grigorovici, Radu G.; Devenyi, Andrei Gavrila; Florea, Valer; Korony, Gheorghe; Belu, Aretia; and Costachescu, Carol, 3,705,993.

Bendix Corporation, The: *See—*
Horn, John W.; and Rachel, Todd L., 3,705,571.

Berchak, James L. Knock-down garment rack with selectively positionable wheels. 3,705,731, Cl. 280-36.00r.

Berestovsky, Georgy Grigorievich: *See—*
Mikhelis, Konstantin Alexandrovich; Fomina, Alexandr Sergeevna; Murumets, Kirill Vladimirovich; Ulanen, Yalmar Semenovich; Kotov, Anatoly Mikhailovich; Volkov, Timofei Mikhailovich; Itsikson, Boris Semenovich; Suurmaa, Raivo Alexandrovich; Viks, Paavo Yaanvich; and Berestovsky, Georgy Grigorievich, 3,705,793.

Bergmann, Karl Heinz, to Deutsche Fernsprecher Gesellschaft mbH. Adjustable relay contact. 3,705,966, Cl. 200-166.00m.

Bergqvist, Ake Torgny, to Aktiebolaget Svenska Metallverken. Apparatus for checking the circumverential edge surface and the diameter of disc-shaped objects. 3,705,647, Cl. 209-88.000.

Bergsland, Joh. Coasting device. 3,705,730, Cl. 280-24.000.

Bergwerksverband GmbH: *See—*
Jankowski, Alfons; and Schuermann, Fritz, 3,705,646.

Berlin, Aaron S.; and Little, Vincent C., to United States of America, Army. Push button munition. 3,705,551, Cl. 102-64.000.

Berney, Bernard C.: *See—*
Olton, Robert N.; and Berney, Bernard C., 3,705,838.

Berns, Charles, to Edwards Company, Inc. Alarm latching circuit. 3,706,087, Cl. 340-213.00r.

Bernstein, Bruce S.: *See—*
Hyman, Seymour; Bernstein, Bruce S.; and Kapoor, Ramesh, 3,705,938.

Berry, Gordon J., Jr., to Portec, Inc. Electrical machine frame. 3,705,994, Cl. 310-91.000.

Bethlehem Steel Corporation: *See—*
Smillinger, Carl W., 3,705,489.

Bevis, Michael J.; Bello, Hobson J.; and Holtz, Carl F., to Eastman Kodak Company. Process for preparing color film with auxiliary or silver sound record using bleach inhibitor. 3,705,803, Cl. 96-4.000.

Beyleveld, Wilhelmus M.: *See—*
Woolf, Cyril; Oxenrider, Bryce C.; and Beyleveld, Wilhelmus M., 3,705,917.

Biddison, John M., to Globe Tool and Engineering Company, The. Wave winding of armatures. 3,705,459, Cl. 29-597.000.

Biensan, Michel; and Bruant, Philippe, to Societe Nationale des Petroles d'Aquitaine. Process for obtaining polylactam powders. 3,705,871, Cl. 260-33.60r.

Bierlein, John C.; De Hart, Arnold D.; and Handwerker, Louis W., Jr., to General Motors Corporation. Method and means for reducing fretting of contacting surfaces. 3,705,753, Cl. 308-240.000.

Bio/Physics Systems, Inc.: *See—*
Friedman, Mitchell; Kamentsky, Louis A.; and Klinger, Isaac, 3,705,771.

Biotest-Serum-Institut, GmbH: *See—*
Russmann, Horst; and Determann, Helmut, 3,705,652.

Bishop, Nigel Douglas: *See—*
Pickles, Cynthia Joan; and Bishop, Nigel Douglas, 3,705,914.

Bishop, Thomas Desmond, to Deritend Engineering Company, The. Rotary die cutting blanks. 3,705,526, Cl. 83-698.000.

Blackburn, Leonard J. Structure demolition apparatus. 3,705,747, Cl. 299-70.000.

Blanie, Marie Jean Michel Paul; Ramis, Jean; and Robert, Henri R., to Societe Civile d'Inventions Idees. Proportioning valve for a pressurized dispenser. 3,705,667, Cl. 222-136.000.

Blockils, Inc.: *See—*
Cunningham, Gerald A., 3,705,708.

Bloomfield, George Vincent, to Brico Engineering Limited. Fuel injection systems for internal combustion engines. 3,705,572, Cl. 123-139.0aw.

Blouri, Byouk: *See—*
Rumpf, Paul; and Blouri, Byouk, 3,705,926.

Bobart, George F.; and Emerson, William A., to United States Steel Corporation. Induction heating method. 3,705,967, Cl. 219-10.410.

Bobeck, Andrew Henry; Kowalchuk, Roman; and Reekstin, John Peter, Jr., to Bell Telephone Laboratories, Incorporated. Fail-safe domain generator for single wall domain arrangements. 3,706,081, Cl. 340-174.0tf.

Bobeck, Andrew Henry; and Danylchuk, Irynej, to Bell Telephone Laboratories, Incorporated. Single wall domain generator. 3,706,082, Cl. 340-174.0tf.

Boehringer Ingelheim G.m.b.H.: *See—*
Wieland, Theodor; Konz, Wilhelm; Faesel, Jurgen; and Lewalter, Jurgen, 3,705,887.

Boeri di A.G. Boer & C.: *See—*
Vicentini, Giorgio; and Console, Giulio, 3,705,687.

Bogdanov, Gorgy Porfirievich: *See—*
Okorokov, Ivan Fedorovich; Bogdanov, Gorgy Porfirievich; Sorokin, Konstantin Alexandrovich; Onischenko, Anatoly Fedorovich; Ziborov, Pavel Efimovich; and Perstnev, Samuil Nisonovich, 3,705,559.

Bolger, John G., Jr.; and Walker, Carl A., to Digilux Corporation, mesne. Method and apparatus for automatic scorekeeper. 3,705,722, Cl. 273-54.00c.

Boots Pure Drug Company Limited: *See—*
Lumb, Melvyn; Macey, Peter Edward; Wright, Richard Donald; and Petchell, Roy Kenneth, 3,705,841.

Bosch, Robert, Photokino GmbH: *See—*
Beinsch, Herbert, 3,705,764.

Botley, Geoffrey Sword: *See—*
Sanders, Kenneth Douglas; Botley, Geoffrey Sword; and Taylor, Jack William, 3,705,507.

Bott, A. Hans, to Harris Intertype Corporation. Frequency control circuit. 3,706,039, Cl. 325-184.000.

Bourgault, Pierre Louis; and Fraser, George Herbert, to Johnson Matthey & Mallory Limited. Ion exchange membrane electrochemical integrator. 3,706,013, Cl. 317-231.000.

Boutwell, Ernest D.; and Longfellow, Jack M., to United States of America, Army, mesne. Test circuits for exploding bridgewire power supply. 3,706,031, Cl. 324-122.000.

Bow, William J.; and Pollard, Richard J., to Foster Wheeler Corporation. Holding system for steam power cycle. 3,705,494, Cl. 60-105.000.

Bower, Barton K., to Hercules Incorporated. Tetra (bicycloheptyl) transition metal compounds. 3,705,916, Cl. 260-429.300.

Bowles Fluidics Corporation: *See—*
Turek, Robert F., 3,705,534.

Boylan, Francis J., to Hercules Incorporated. Method of abating foam formation in aqueous systems. 3,705,859, Cl. 252-321.000.

Bradshaw, Thurman O.; and Rogers, William W. Fish locator with audio monitor. 3,706,068, Cl. 340-3.00r.

Brand, Abraham: *See—*
Mowrey, Albert C.; Huiskes, John H.; and Brand, Abraham, 3,706,085.

Brandel, Wynand W.; and Klass, Lawrence S., to Avco Corporation. Low penetration ball forming process. 3,705,511, Cl. 72-53.000.

Braswell, James W. Flushing apparatus. 3,705,428, Cl. 4-58.000.

Brauer, Robert C. Waste disposal system. 3,705,851, Cl. 210-1.000.

Bredzs, Nikolajs, to Wall Colmonoy Corporation. Cermet alloy composition. 3,705,791, Cl. 29-195.000.

Breer, Karl Wilhelm; and Weinbrenner, Erwin, to Farbenfabriken Bayer Aktiengesellschaft. Process and apparatus for applying polyurethane foam-forming composition. 3,705,821, Cl. 117-105.300.

Bremshey & Co.: *See—*
Ambrosius, Manfred, 3,705,745.

Brenneman, Roderick L.; and McLeon, Daniel M., to Georgia-Pacific Corporation. Method for fastening wood veneer sheets together edge to edge. 3,705,829, Cl. 156-65.000.

Breslauer, Charles S., to Grace, W. R., & Co. Woodflake composition for panels and method of making same. 3,705,837, Cl. 161-168.000.

Breslow, Jeffrey D., to Glass, Marvin, & Associates. Board game apparatus. 3,705,727, Cl. 273-135.00b.

Brewer, Lee M.; and Rohde, Robert P., to General Motors Corporation. Engine idle speed governor and throttle control. 3,705,685, Cl. 236-93.000.

Brickner, David R.; and Schell, Sidney T., to Sperry Rand Corporation. Controlled magnitude repeater for synchro and resolver signals. 3,705,980, Cl. 235-186.000.

Brico Engineering Limited: *See—*
Bloomfield, George Vincent, 3,705,572.

Bridgestone Tire Company Limited: *See—*
Honda, Toshio; Kubota, Eishi; Fukuura, Yukio; and Kobayashi, Yoneji, 3,705,868.

Bridgewater, Thomas Austin, to RCA Corporation. Motor control circuit. 3,706,016, Cl. 318-16.000.

Brigg, Alan Henry: *See—*
Wilson, Eric John; Brigg, Alan Henry; and Timmons, Eric, 3,705,555.

Bright, Elvin M. Molded drinking receptacle. 3,705,660, Cl. 215-1.00c.

Brizgys, Bernardas, to BASF Wyandotte Corporation. Urethane coating compositions. 3,705,879, Cl. 260-77.5ac.

Brooks, Edward A.: *See—*
Duckett, John W.; Brooks, Edward A.; and Reynolds, Clarke, 3,705,566.

Brooks, Frank W.; and Gebhart, Norman L., to General Motors Corporation. Disc brake. 3,705,641, Cl. 188-73.300.

Brother Kogyo Kabushiki Kaisha: *See—*
Sakawa, Katuaki; and Kozawa, Tetuo, 3,705,561.

Broughton, Terence D.: *See—*
Stoddard, Ivan; and Broughton, Terence D., 3,705,433.

Brower, Robert L.: *See—*
Rukavina, Louis, Jr.; Brower, Robert L.; and Lane, Daniel J., 3,705,437.

Brown, Clifford: *See—*
Kolko, Gary A.; and Brown, Clifford, 3,705,788.

Brown, Joseph W. Combustion heads. 3,705,690, Cl. 239-424.500.

Browning, Charles E., to United States of America, Air Force. Thermally stable polyimides. 3,705,875, Cl. 260-63.00n.

Bruant, Philippe: *See—*
Biensan, Michel; and Bruant, Philippe, 3,705,871.

Bruckner, Klaus: *See—*
Irmscher, Klaus; and Bruckner, Klaus, 3,705,915.

Brudermanns, Karola: *See—*
Wingler, Frank; Brudermanns, Karola; and Bartl, Herbert, 3,705,883.

Bruner, Mates A. Watchband coupling. 3,705,456, Cl. 24-265.00b.

Bucode Inc.: *See—*
Klang, Daniel M., 3,706,020.

Budd Company, The: *See—*
Eggert, Walter S., Jr., 3,705,705.
Gilmour, Richard C.; Kaitz, Vincent A.; and Lemberger, Adolph W., 3,705,525.

Budington, Richard V., to Longview Fibre Company. Knock-down table of paperboard sheet material. 3,705,557, Cl. 108-150.000.

Bullen, Leslie Gerald: *See—*
Bell, Samuel; and Bullen, Leslie Gerald, 3,705,431.

Bungenstab, Eckart: *See—*
Touchy, Wolfgang; and Bungenstab, Eckart, 3,705,825.

Bunker-Ramo Corporation, The: *See—*
Knitter, Heinz; and Sorg, Paul, 3,706,065.

Burkard, Perle N.: *See—*
Sedliar, Ronald M.; Aepli, Otto T.; and Burkard, Perle N., 3,705,856.

Burke, Leo J. Portable electric ice auger. 3,705,632, Cl. 173-27.000.

Burnham Corporation: *See—*
Reichhelm, Robert; and Morrison, Albert, Jr., 3,705,784.

Burnham, Stephen G. Multitone wooden drum. 3,705,527, Cl. 84-403.000.

Burns, Marvin: *See—*
Marcum, Alfred L., Jr.; Burns, Marvin; and Rodzen, Richard A., 3,705,426.

Busatto, Vinicio, to Minnesota Mining & Manufacturing Company. Photosensitive mateal for radiography. 3,705,807, Cl. 96-84.00r.

Busking, Bob E.: *See—*
Van Eek, Wouter H.; Busking, Bob E.; and Van Gils, Adrianus W., 3,705,623.

Cable Electric Products, Inc.: *See—*
Schwartz, Frederic W., 3,706,004.

Callaghan, James I. Burglar alarm triggered by breaking of a magnetic circuit. 3,706,090, Cl. 340-274.000.

Callighan, Robert H.; and Masciantonio, Philip X., to United States Steel Corporation. Process for the preparation of glyoxylic acid methyl hemiacetal. 3,705,922, Cl. 260-535.00r.

Camera, Jack: *See—*
Clarke, Dudley S.; and Camera, Jack, 3,705,987.

Campbell, Lewis B.: *See—*
Sayre, Robert E.; Campbell, Lewis B.; and Pietrzak, Joe P., 3,705,831.

Camporese, Marsilio; and Levi, Alberto. Automatic button fastening device. 3,705,443, Cl. 24-90.0pr.

Camras, Marvin, to IIT Research Institute. Video transducing apparatus. 3,705,954, Cl. 178-6.60a.

Canadian General Electric Company, Limited: *See—*
Eastcott, Peter de Hertel, 3,705,640.

Cane Machinery & Engineering Company, Inc.: *See—*
Willett, Harold A., 3,705,481.

Canevari, Roger: *See—*
Regnier, Gilbert; Canevari, Roger; and Duhault, Jacques, 3,705,899.

Canup, Robert F. Saturable core square wave oscillator with switching transient reducing means. 3,706,052, Cl. 331-113.00a.

Carborundum Company, The: *See—*
Baughman, Davis L., 3,705,510.

Carli, Roberto; and Gordini, Silvano, to Snam Progetti S.p.A. Method for regulating the temperature and the conversion in a polymerization reactor and apparatus suitable to realize the same. 3,705,787, Cl. 23-230.00a.

Carlson, Richard A., to General Motors Corporation. Vehicle daytime running lights. 3,706,005, Cl. 315-82.000.

Carlton, Lawrence W.: *See—*
Krammer, Vance M.; and Carlton, Lawrence W., 3,705,780.

Carpenter, Keith H., to General Motors Corporation. Depressed park windshield wiper system. 3,705,520, Cl. 74-600.000.

Carpenter Technology Corporation: *See—*
Muzyka, Donald R.; and Schlosser, Donald K., 3,705,827.

Carreira, Leonard M.: *See—*
Mihajlov, Vsevolod S.; and Carreira, Leonard M., 3,705,797.

Carrier Corporation: *See—*
Mount, Gordon L.; and Endress, James W., 3,705,499.

Carruthers, George A.: *See—*
Sholly, William C., Jr.; and Carruthers, George A., 3,705,488.

Carruthers, George A., to Turbo Machine Company. False-twisting apparatus. 3,705,487, Cl. 57-77.400.

Casagrande, Antonio. Universal machine for foundations. 3,705,634, Cl. 175-122.000.

Case, J. I., Company: *See—*
Seaberg, David H., 3,705,631.

Cason, Charles M., III, to United States of America, Army. Magnetohydrodynamic gas dynamic laser. 3,706,050, Cl. 331-94.500.

Castelli, Leonida: *See—*
Piretti, Giancarlo; and Castelli, Leonida, 3,705,744.

Cavaliarin, Bruno: *See—*
Palazzetti, Mario; and Cavaliarin, Bruno, 3,705,573.

Celanese Corporation: *See—*
Ram, Michael J., 3,705,675.

Cellini, Michael: *See—*
Romanowski, Robert F.; and Cellini, Michael, 3,705,964.

Chabot, Ferdinand E., to Square D Company. Parallel-pole circuit breaker. 3,706,056, Cl. 335-10.000.

Chabrerie, Jean-Pierre; and Mailfert, Alain Jacques. Homopolar machine with multiple discs and a short inductor. 3,705,995, Cl. 310-178.000.

Chagnon, Verdun P. Scuba diving reel. 3,705,697, Cl. 242-55.000.

Charney, Andrew. Fish lure. 3,705,465, Cl. 43-42.006.

Cheman Corporation of America: *See—*
Lee, Aaron, 3,705,689.

Chemische Werke Huels, Aktiengesellschaft: *See—*
Frese, Albert, 3,705,884.

Chen, Pictiaw; and Mehlschau, James J., to University of California, The Regents of the. Bush berry harvester. 3,705,486, Cl. 56-330.000.

Chervenak, Michael C.: *See—*
Alpert, Seymour B.; and Chervenak, Michael C., 3,705,849.

Cherwek, Roland A., to Raytheon Company. Signal processor. 3,706,095, Cl. 343-7.700.

Chisholm-Ryder Company, Inc.: *See—*
Jarrell, Virgil N.; and Towson, Arthur L., 3,705,483.

Chono, Koji: *See—*
Matsuo, Toshiaki; Chono, Koji; Go, Tadahiro; and Komai, Hirotaka, 3,705,880.

Christian, Robert L.: *See—*
Heller, William C., Jr.; Leatherman, Alfred F.; and Christian, Robert L., 3,705,819.

Christin, Georges, to Etablissements Bertrand Faure. Device for bending metallic tubes and in bent metallic tubes. 3,705,604, Cl. 138-178.000.

Ciba-Geigy AG: *See—*
Hennart, Claude; Martin, George; Mandon, Jean-Pierre; and Rabussier, Bernard Aranton, 3,705,941.
Martin, Henry; and Drabek, Josef, 3,705,904.
Zwahlen, Guenther; Retch, Ernst; and Schoohf, Karl Ewald, 3,705,816.

Ciba-Geigy Corporation: *See—*
Darmory, Franklin P.; and Di Benedetto, Marianne, 3,705,869.
Darmory, Franklin P.; and Di Benedetto, Marianne, 3,705,870.
Frick, Wilhelm E.; Harle, Horst; and Wenger, Thomas, 3,705,944.
Grunwaldt, Edgar, 3,705,942.

C.I.T.-Compagnie Industrielle des Telecommunications: *See—*
Jacob, Jean-Baptiste, 3,705,958.

City Welding & Manufacturing Co., Inc.: *See—*
Marinelli, Joseph A., 3,705,732.

Ciulacu, Paraschiv: *See—*
Gurgui, Constantin; Luca, Vasile; Eckardt, Andrei; and Ciulacu, Paraschiv, 3,705,830.

Clark Equipment Company: *See—*
Heggen, John Peter, 3,705,600.

Clarke, Dudley S.; and Camera, Jack, to Autoquip Corporation. Operating differential extender for photoelectric eye or equivalent sensing device. 3,705,987, Cl. 250-201.000.

Clarke, Gail H., Jr.; and Barnowski, Guilford Henry G., Jr., to Olin Corporation. Composition and method for stripping polyvinyl butyral primed coatings. 3,705,857, Cl. 252-170.000.

Claudius, Peters Aktiengesellschaft: *See—*
Kayatz, Karl-Heinz, 3,705,460.

Clavin, Edward A.; McCullough, Donald H.; and McCullough, David R., to Arc-Crose International, Inc. Automatic positioning device. 3,705,506, Cl. 72-21.000.

Cleaning Systems Industries, Inc.: *See—*
Rukavina, Louis, Jr.; Brower, Robert L.; and Lane, Daniel J., 3,705,437.

Coffin, David W., Sr.: *See—*
Langendorfer, Walter J.; and Coffin, David W., Sr., 3,705,760.

Cohen, Kenneth W.; and Martin, Thomas E., to Bailey Meter Company. Fluidic on-line system tester. 3,705,535, Cl. 73-420.000.

Cole, Peter Harold; and Vaughan, Richard. Electronic surveillance system. 3,706,094, Cl. 343-6.5ss.

Cole, Raymond Alfred: *See—*
Laurie, James Harold; and Cole, Raymond Alfred, 3,705,547.

Colgate-Palmolive Company: *See—*
Marschner, Frank William, 3,705,855.

Collier, Franck; Dauchy, Jean-Daniel; Le Sergent, Christian; and Michon, Maurice, to Compagnie Generale d'Electricite. Liquid laser. 3,706,051, Cl. 331-94.500.

Collin, Heinrich, to Kanas Maffei Aktiengesellschaft. Plastifying apparatus. 3,705,778, Cl. 425-224.000.

Colling, Ronald L.; and Trenne, Myron U., to General Motors Corporation. Automatic re-engage circuit for an electronic speed control system. 3,705,639, Cl. 180-105.000.

Collins Radio Company: *See—*
White, Kenneth H., 3,705,530.

Color Systems, Inc.: *See—*
Ladd, Fred; and Song, Jung Hoon, 3,705,762.

Colt Industries Operating Corporation: *See—*
Bell, Oliver A., Jr., 3,705,969.

Comley, Erasmus Smit. Locking of car radios and the like. 3,705,612, Cl. 151-39.000.

Commercial Solvents Corporation: *See—*
Stephan, John T.; and Golick, A. J., 3,705,832.

Commonwealth Scientific and Industrial Research Organisation: *See—*
Culvenor, Claude Charles Joseph; Edgar, John Alexander; Smith, Leslie Walter; Tweeddale, Helen Joan; Jago, Marjorie; and French, Eric Ancelot, 3,705,905.

Communications Patents Limited: *See—*
Gargini, Eric J., 3,706,040.

Compagnie Generale d'Electricite: *See—*
Collier, Franck; Dauchy, Jean-Daniel; Le Sergent, Christian; and Michon, Maurice, 3,706,051.

Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie: *See—*
Verdier, Henri, 3,705,613.

Computek, Inc.: *See—*
Dertouzos, Michael L., 3,705,956.

Computer Specialties Corporation: *See—*
Greenley, Henry R.; and Craig, William E. (said Craig assor. to), 3,706,072.

Computer Transmission Corporation: *See—*
Sanders, Ray W.; Luce, David W.; and Quan, William, 3,705,986.

Confer, Raymond C.; and Talmon, Floyd H., to Air-Lock Plastic, Inc. Method for blow molding and compression molding thermoplastic material. 3,705,931, Cl. 264-89.000.

Conjeaud, Pierre: *See—*
Assouline, George; Conjeaud, Pierre; Girault, Pierre; and Leiba, Eugene, 3,705,955.

Conley, Larry R.: *See—*
Weatherman, John F.; Walker, Gary J.; and Conley, Larry R., 3,705,970.

Conn, William M., to Dresser Industries, Inc. Large diameter earth boring bit. 3,705,635, Cl. 175-364.000.

Console, Giulio: *See—*
Vicentini, Giorgio; and Console, Giulio, 3,705,687.

Construction Forms, Inc.: *See—*
Westerlund, Robert E.; and Westerlund, Herbert A., 3,705,737.

Continental Can Company, Inc.: *See—*
Rossi, Harry; and Myers, John H., 3,705,681.

Continental Oil Company: *See—*
Starks, Charles M.; and Mc Claflin, Gifford G., 3,705,925.

Cook, Gordon Henry; and Lajrent, Francois, to Rank Organisation Limited, The. Optical objective of variable focal length. 3,705,759, Cl. 350-184.000.

Cooksey, Frank; Dix, Terence A.; and Hobson, David J. Curtain suspension rails. 3,705,439, Cl. 16-94.000.

Cooper, Robin D. G., to Lilly, Eli, and Company. Rearrangement of penicillin. 3,705,892, Cl. 260-239.100.

Cooperman, Morton: *See—*
Mansfield, Matthewand; and Cooperman, Morton, 3,705,462.

Cordes, Charles P. Cymbal retainer. 3,705,528, Cl. 84-421.000.

Cordes, Karl-Heinz: *See—*
Schimmer, Rigobert; Gesing, Horst; and Cordes, Karl-Heinz, 3,706,015.

Corey, Earl E.; Tuft, Richard A.; and Woodward, Jason H., to United States of America, Army. High efficiency capacitor charging circuit. 3,706,022, Cl. 320-1.000.

Costachescu, Carol: *See—*
Grigorovici, Radu G.; Devenyi, Andrei Gavrila; Florea, Valer; Korony, Gheorghe; Belu, Aretia; and Costachescu, Carol, 3,705,993.

Coulter Electronics, Inc.: *See—*
Klein, Robert I.; and Hogg, Walter R., 3,706,030.

Courtney, Welby G.: *See—*
Greiner, Leonard; and Courtney, Welby G., 3,705,495.

Cox, Duncan B., Jr.; and Fertig, Kenneth, to Massachusetts Institute of Technology. Electronic instrument servo. 3,706,092, Cl. 340-347.0ad.

Cox, Robert P.; and Fish, Leonard A., to Wham-O Manufacturing Company. Foamable resinous composition. 3,705,669, Cl. 222-394.000.

Craig, William E.: *See—*
Greenley, Henry R.; and Craig, William E., 3,706,072.

Crank, George, to Lilly Industries, Ltd. 2-Carbamido and thiocarbamido oxazoles. 3,705,903, Cl. 260-307.00r.

Cray, Charles John: *See—*
Barker, Sidney Alan; Kennedy, John Frederick; and Cray, Charles John, 3,705,890.

Creators Limited: *See—*
Kent, Cecil, 3,705,470.

Credit Keys Limited: *See—*
Sanders, Kenneth Douglas; Botley, Geoffrey Sword; and Taylor, Jack William, 3,705,507.

Crow, Morgan L., to Dresser Industries, Inc. Retaining pin and bearing assembly. 3,705,750, Cl. 308-8.200.

Cryogenic Engeneering Company: *See—*
De Haan, James R., 3,705,498.

Culvenor, Claude Charles Joseph; Edgar, John Alexander; Smith, Leslie Walter; Tweeddale, Helen Joan; Jago, Marjorie; and French, Eric Ancelot, to Commonwealth Scientific and Industrial Research Organisation. 6,7-Dihydro-5h-pyrrolizines and method of preparation. 3,705,905, Cl. 260-326.50r.

Cunningham, Gerald A., to Blockils, Inc. Pulley block. 3,705,708, Cl. 254-195.000.

Curtis Instruments, Inc.: *See—*
Marwell, Edward M.; and Finger, Eugene P., 3,706,036.

Custer, Willard R. Air flow control means for channel winged aircraft. 3,705,700, Cl. 244-13.000.

Cutler, Lester M.; and Friedman, Paul, to Vibra-Baths Home Products, Inc. Waterproof battery operated vibrator. 3,705,578, Cl. 128-36.000.
Cutler-Hammer, Inc.: *See—*
Halbeck, Werner B.; Quaal, John A.; and Robbins, Clyde F., 3,706,100.
Czurak, Richard H.; and Thompson, Robert M., to Scott, O. M., and Sons Company, The. Roamed fertilizers and combination products. 3,705,794, Cl. 71-29.000.
Dahl, Ernest A., Jr. Microfilm holder. 3,705,464, Cl. 40-105.500.
Dahlgren, Harold P. Method of preparing dampening transfer and material conditioning roller. 3,705,451, Cl. 29-148.40d.
Daida Metal Company Ltd.: *See—*
Morisaki, Nobukazu, 3,705,450.
Daiichi Seiyaku Company Limited: *See—*
Oshima, Yasuo; Nakazawa, Nobuhiko; Nagasaki, Senkichi; Naito, Takeo; Osada, Yasuaki; Okusa, Naoya; Inuaki, Akira; and Tanaka, Kazuyuki, 3,705,989.
Danfoss A/S: *See—*
Holm, Svend Age, 3,705,619.
Jorgensen, Aage Hojgaard, 3,706,088.
Daniel, David W., to Lear Siegler, Inc. Rolling high helix pinions. 3,705,513, Cl. 72-102.000.
Dany, Franz-Josef: *See—*
Kandler, Joachim; Dany, Franz-Josef; Komorniczyk, Klaus; and Munch, Peter, 3,705,865.
Danylchuk, Irynej: *See—*
Bobeck, Andrew Henry; and Danylchuk, Irynej, 3,706,082.
Darmory, Franklin P.; and Di Benedetto, Marianne, to Ciba-Geigy Corporation. Soluble polyimides. 3,705,869, Cl. 260-302.00r.
Darmory, Franklin P.; and Di Benedetto, Marianne, to Ciba-Geigy Corporation. Soluble polyimides from aromatic dianhydrides and 2,4-diaminodiphenylamines and 2,4-diaminodiphenyl sulfides. 3,705,870, Cl. 260-30.20r.
Data Packaging Corporation: *See—*
Watkins, Louie W., Jr., 3,705,432.
Dauchy, Jean-Daniel: *See—*
Collier, Franck; Dauchy, Jean-Daniel; Le Sergent, Christian; and Michon, Maurice, 3,706,051.
David, Edwards G.: *See—*
Starr, Arthur T.; and David, Edwards G., 3,706,054.
Davidson, David Fulton; and Irving, Brian Arthur, to Associated Electrical Industries, Limited. Electrically insulating joints for high-pressure pipelines. 3,705,735, Cl. 285-53.000.
Davis, Peter J. Multiple compartment thermally insulated container. 3,705,661, Cl. 215-6.000.
Dawson, Gordon Bertran, to Dowty Meco Limited. Joints for flexible ducting. 3,705,736, Cl. 285-260.000.
De Haan, James R., to Cryogenic Engeneering Company. Method and apparatus for cooling a cryogenic storage container. 3,705,498, Cl. 62-54.000.
De Hart, Arnold D.: *See—*
Bierlein, John C.; De Hart, Arnold D.; and Handwerker, Louis W., Jr., 3,705,753.
De Schamphelaere, Lucien Amede, to Agfa-Gevaert, Mortsel-Belgium. Time shared digital and analog process control. 3,705,978, Cl. 235-151.100.
Dean, Raymond Harkless, to RCA Corporation. Semiconductor device. 3,706,014, Cl. 317-234.00r.
Decision Data Corporation: *See—*
McPherson, Frank H.; Lownes, Irvin S., Jr.; and Richardson, Thomas L., 3,706,074.
Dee, Colin W., to Horstmann Gear Co., Ltd., The. Spherical bearing. 3,705,751, Cl. 308-9.000.
Deere & Company: *See—*
Hunger, Richard H.; and Gilbert, LeLand Glen, 3,705,656.
Nelson, Roger John, 3,705,493.
Demag A.G.: *See—*
Fahrenholz, Heinz, 3,705,655.
Demag Aktiengesellschaft: *See—*
Wirtz, Walter; and Genge, Ulrich, 3,705,713.
Deritend Engineering Company, The: *See—*
Bishop, Thomas Desmond, 3,705,526.
Dertouzos, Michael L., to Computek, Inc. Graphic data tablet. 3,705,956, Cl. 178-18.000.
Deryagin, Boris Vladimirovich: *See—*
Dzevitsky, Boris Eduardovich; Spitsyn, Boris Vladimirovich; Kochkin, Dmitry Alexandrovich; and Deryagin, Boris Vladimirovich, 3,705,937.
Desnoyers, George J.: *See—*
Hirst, Robert G.; and Desnoyers, George J., 3,705,826.
Determann, Helmut: *See—*
Russmann, Horst; and Determann, Helmut, 3,705,652.
Deutsche Fernsprecher Gesellschaft mbH: *See—*
Bergmann, Karl Heinz, 3,705,966.
Deutsche Gold- und Silber-Scheideanstalt vormal Roessler: *See—*
Kirchgassner, Hedwig, 3,705,940.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Amann, Herbert; and Bader, Erich, 3,705,876.
Devenyi, Andrei Gavrila: *See—*
Grigorovici, Radu G.; Devenyi, Andrei Gavrila; Florea, Valer; Korony, Gheorghe; Belu, Aretia; and Costachescu, Carol, 3,705,993.
Di Benedetto, Marianne: *See—*
Darmory, Franklin P.; and Di Benedetto, Marianne, 3,705,869.
Darmory, Franklin P.; and Di Benedetto, Marianne, 3,705,870.
Diamond Shamrock Corporation: *See—*
Barbato, Alexander L., 3,705,842.
Diehl, Max H., to General Electric Company. Vertical aperture correction circuit. 3,705,952, Cl. 178-7.200.
Dieulesaint, Eugene Jean; and Hartman, Pierre, to Thomson-CSF. Electromechanical delay with continuously adjustable delay. 3,706,055, Cl. 333-30.00r.
Digi-Log Systems, Inc.: *See—*
Moyer, Ronald G.; and Emory, Thomas M., Jr., 3,705,988.
Digilux Corporation, mesne: *See—*
Bolger, John G., Jr.; and Walker, Carl A., 3,705,722.
Dimo, Dimitrie P.: *See—*
Dimo, Paul G.; and Dimo, Dimitrie P., 3,706,073.
Dimo, Paul G.; and Dimo, Dimitrie P. Graphic display apparatus for direct analysis of electric power systems. 3,706,073, Cl. 340-172.500.
Dix, Terence A.: *See—*
Cooksey, Frank; Dix, Terence A.; and Hobson, David J., 3,705,439.
Dolfini, Joseph Edward: *See—*
Narayanan, Venkatachala Lakshmi; and Dolfini, Joseph Edward, 3,705,906.
Douty, Donald L., to United States Steel Corporation. Can end with bonded seal slide. 3,705,670, Cl. 222-541.000.
Douty, Donald L., to United States Steel Corporation. Can end with bonded seal slides. 3,705,671, Cl. 222-484.000.
Dover Corporation (Canada) Limited: *See—*
Gingrich, John A., 3,706,017.
Dow Chemical Company, The: *See—*
Pitts, Charles A., 3,705,624.
Dowty Meco Limited: *See—*
Dawson, Gordon Bertran, 3,705,736.
Drabek, Josef: *See—*
Martin, Henry; and Drabek, Josef, 3,705,904.
Drake, Leon A. Cast spreading device. 3,705,581, Cl. 128-83.000.
Dresser Industries, Inc.: *See—*
Conn, William M., 3,705,635.
Crow, Morgan L., 3,705,750.
Drum, James R.; and Temple, Philip A., to Hon Industrs Inc. Filing units. 3,705,754, Cl. 312-214.000.
Du Pont de Nemours, E. I., and Company: *See—*
Holmes, David Alan, 3,705,867.
Klopping, Hein L., 3,705,939.
Duckett, John W.; Brooks, Edward A.; and Reynolds, Clarke, to American Molded Products, Ltd. Self-righting road delineator. 3,705,566, Cl. 116-63.00p.
Duff, Joseph H.: *See—*
Longo, John F.; and Duff, Joseph H., 3,705,477.
Duhault, Jacques: *See—*
Regnier, Gilbert; Canevari, Roger; and Duhault, Jacques, 3,705,899.
Duncan, Angelo N., to Smith, A. O., Corporation. Water heating and storage system with mixing valve. 3,705,574, Cl. 126-362.000.
Dundon, John Peter, to American Cyanamid Company. Process for crease resistant textiles. 3,705,822, Cl. 117-139.400.
Dundon, Thomas M.: *See—*
Regitz, William M.; and Dundon, Thomas M., 3,706,084.
Dunham-Bush, Inc.: *See—*
Schwarz, Leonard H., 3,705,622.
Dunn, Robert T.: *See—*
Evans, Robert P.; Hussar, Joseph P.; Evans, Gerald R.; and Dunn, Robert T., 3,705,960.
Dunphy, Kenneth Robert; and Helseth, Richard Lee. Product weighting system. 3,705,636, Cl. 177-114.000.
Durr, Heinz, to Durr, Otto. Method for treating the surfaces of vehicle bodies. 3,705,817, Cl. 117-49.000.
Durr, Otto: *See—*
Durr, Heinz, 3,705,817.
Duvall, Jacque L., to BASF Wyandotte Corporation. Antifoam agent. 3,705,860, Cl. 252-358.000.
Dyke, Richard W.; and Sweeney, Martin J., to Lilly, Eli, and Company. Method of treating hyperuricemia. 3,705,946, Cl. 424-279.000.
Dynes, Robert Carr; and Fulton, Theodore Alan, to Bell Telephone Laboratories, Inc. Magnetically controlled supercurrent switch. 3,706,064, Cl. 338-32.00s.
Dzevitsky, Boris Eduardovich; Spitsyn, Boris Vladimirovich; Kochkin, Dmitry Alexandrovich; and Deryagin, Boris Vladimirovich. Producing diamonds synthetically. 3,705,937, Cl. 423-446.000.
Eastcott, Peter de Hertel, to Canadian General Electric Company, Limited. Signalling system for mine hoists. 3,705,640, Cl. 187-29.00r.
Eastman Kodak Compan: *See—*
Ferris, James E., 3,705,664.
Eastman Kodak Company: *See—*
Almstead, James L., 3,705,763.
Bailey, Joseph, 3,705,896.
Baptista, John L., 3,705,802.
Bello, Hobson J.; and Holtz, Carl F., 3,705,799.
Bevis, Michael J.; Bello, Hobson J.; and Holtz, Carl F., 3,705,803.
Edwards, Evan A.; and Van Duzer, Richard H., 3,705,696.
Fox, Charles J.; and Johnson, Arthur L., 3,705,913.
Hendrickson, Thomas N., 3,705,716.
Holtz, Carl F., 3,705,801.
Kindig, Edwin Guilford, 3,705,541.

Lane, William S., 3,705,800.
Luckey, George William; and Sherwood, Charles Frederick, 3,705,858.

Eckardt, Andrei: *See—*
Gurgui, Constantin; Luca, Vasile; Eckardt, Andrei; and Ciulacu, Paraschiv, 3,705,830.

Ecodyne Corporation: *See—*
Longo, John F.; and Duff, Joseph H., 3,705,477.

ECP Manufacturing Co.: *See—*
Weiss, Irving F., 3,705,949.

Edgar, John Alexander: *See—*
Culvenor, Claude Charles Joseph; Edgar, John Alexander; Smith, Leslie Walter; Tweeddale, Helen Joan; Jago, Marjorie; and French, Eric Ancelot, 3,705,905.

Edwards Company, Inc.: *See—*
Berns, Charles, 3,706,087.

Edwards, Dan M.: *See—*
Grice, Karl R., Jr.; and Edwards, Dan M., 3,706,027.

Edwards, Evan A.; and Van Duzer, Richard H., to Eastman Kodak Company. Filmstrip and film strip retention device. 3,705,696, Cl. 242-71.200.

Edwards, Lynn Euryl. Incontinence device for female use. 3,705,575, Cl. 128-1.00r.

Eggert, Walter S., Jr., to Budd Company, The. Seat deceleration attenuation apparatus. 3,705,705, Cl. 248-430.000.

Egnaczak, Raymond K., to Xerox Corporation. Photoelectrophoretic apparatus. 3,705,766, Cl. 355-3.000.

Eikenberry, Willis M., to Gulf and Western Industries, Inc. Vehicular traffic control signal and gasket. 3,706,070, Cl. 340-119.00r.

Einstein, Alfred C., to Affiliated Hospital Products, Inc. Tiddly winks target board. 3,705,724, Cl. 273-95.000.

Eissler, Charles J. Baseball game. 3,705,723, Cl. 273-89.000.

Electric & Musical Industries Limited: *See—*
Bell, Samuel; and Bullen, Leslie Gerald, 3,705,431.
Taylor, Richard John, 3,705,839.

Electrogenics, Inc.: *See—*
Sickels, David W., 3,705,843.

Electronique Marcel Dassault: *See—*
Salvert, Bernard, 3,706,045.

Electrovert Manufacturing Co., Ltd.: *See—*
Tardoskegyi, Louis V., 3,705,457.

Elitex: *See—*
Skopalik, Josef; Svoboda, Vladimir; and Opatril, Vaclav, 3,705,503.

Ellenberger & Poensgen, GmbH: *See—*
Ellenberger, Jakob, 3,706,057.

Ellenberger, Jakob, to Ellenberger & Poensgen, GmbH. Single or multi pole pushbutton actuated excess current switch having thermal and/or electromagnetic trip. 3,706,057, Cl. 335-23.000.

Elox Inc.: *See—*
Verner, Dalton R., 3,705,968.

Elser, William F., to Owens Illinois, Inc. Method of forming convenience closure for container body. 3,705,563, Cl. 113-121.00c.

Emels, Reimer, to Siemens Aktiengesellschaft. Device for indiffusing dopants into semiconductor wafers. 3,705,567, Cl. 118-49.000.

Emerson Electric Co.: *See—*
Krausser, Friedrich Johann, 3,706,041.

Emerson, William A.: *See—*
Bobart, George F.; and Emerson, William A., 3,705,967.

Emory, Thomas M., Jr.: *See—*
Moyer, Ronald G.; and Emory, Thomas M., Jr., 3,705,988.

Endress, James W.: *See—*
Mount, Gordon L.; and Endress, James W., 3,705,499.

Engelhart, John E.: *See—*
Lundberg, Charles A., Jr.; and Engelhart, John E., 3,705,910.

Engels, Siegfried: *See—*
Stosberg, Herbert; Fleischmann, Horst; Reinhards, Gunter; and Engels, Siegfried, 3,705,438.

Engemann, Gotthard: *See—*
Strickrodt, Jorg; Engemann, Gotthard; and Eulenhofer, Hans-Gerd, 3,705,921.

English Steel Corporation, Limited: *See—*
Wilson, Eric John; Brigg, Alan Henry; and Timmons, Eric, 3,705,555.

Enskat, Albert G.: *See—*
Polit, Neil A.; and Enskat, Albert G., 3,705,719.

Entwistle Company, The: *See—*
Waterman, John E., 3,705,548.

Eremenko, Vladimir Grigorievich, to Moskovsky Ordena Lenina Energeticheskiy Institut Krasnokazarmennaya Ulitso. Device for measuring angular position of the rotor of a synchronous electric motor and a thyratron electric motor. 3,706,019, Cl. 318-138.000.

Erickson, Hugo S. Protective sealing washer for storage battery. 3,705,824, Cl. 136-181.000.

Erico Products, Inc.: *See—*
Geiger, Willard L., 3,706,098.

Eriez Manufacturing Company: *See—*
Tenpas, Emerson J., 3,705,679.

Eriksson, George J., to Superior Concrete Accessories, Inc. Anchor insert and setting cone for a precast concrete body. 3,705,469, Cl. 52-125.000.

Ernst, Alfons; and Jung, Werner, to Heidenhain, Johannes, Dr., Firma. Drive for rotatable parts. 3,705,518, Cl. 74-410.000.

Ernst, Max. Turntable for electric toy and model railroad installations. 3,705,553, Cl. 104-35.000.

Esso Research and Engineering Company: *See—*
Lundberg, Charles A., Jr.; and Engelhart, John E., 3,705,910.

Etablissements Bertrand Faure: *See—*
Christin, Georges, 3,705,604.

Eue, Ludwig: *See—*
Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,705,929.

Eulenhofer, Hans-Gerd: *See—*
Strickrodt, Jorg; Engemann, Gotthard; and Eulenhofer, Hans-Gerd, 3,705,921.

Evans, Gerald R.: *See—*
Evans, Robert P.; Hussar, Joseph P.; Evans, Gerald R.; and Dunn, Robert T., 3,705,960.

Evans, Robert P.; Hussar, Joseph P.; Evans, Gerald R.; and Dunn, Robert T. Automatic repertory telephone dialer with perforated strip number storage. 3,705,960, Cl. 179-90.00r.

Evel, Eddie A.: *See—*
Hintze, Melvin M.; Mari, John P.; McDaniel, Roy F.; and Evel, Eddie A., 3,706,044.

Everaerts, Frans, to LKB-Produkter AB. Method in counterflow isotachophoresis. 3,705,845, Cl. 204-180.00r.

Fa. Gebauer & Lehmer: *See—*
Tenner, Oskar, 3,705,616.

Factory Mutual Research Corporation: *See—*
Zenker, Karol R., 3,705,691.

Faesel, Jurgen: *See—*
Wieland, Theodor; Konz, Wilhelm; Faesel, Jurgen; and Lewalter, Jurgen, 3,705,887.

Fahrenholz, Heinz, to Demag A.G. Device for the controlled rotation and feeding of a workpiece particularly for a cold pilger machine. 3,705,655, Cl. 214-338.000.

Famai, Yasuo; and Fukushima, Osamu, to Fuji Photo Film Co., Ltd. Electrophotographic device. 3,705,767, Cl. 355-4.000.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Breer, Karl Wilhelm; and Weinbrenner, Erwin, 3,705,821.
Merten, Rudolf; and Zecher, Wilfried, 3,705,874.
Schlor, Hanshelmut; Hoffmann, Hellmut; Regel, Erik; and Scheinpflug, Hans, 3,705,930.
Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,705,929.
Stolzer, Claus; Hammann, Igeborg; and Unterstengofer, Gunther, 3,705,927.
Stolzer, Claus; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,705,928.

Farney, Leonard C.; and Haberlin, Richard J., to Polaroid Corporation. Diffusion transfer production of reflection positive with macroscopic pigment in receptive stratum. 3,705,804, Cl. 96-29.00r.

Farnsworth, Richard G., to General Electric Company. Solid state scanner for a remote meter reading system. 3,706,086, Cl. 340-180.000.

Fau, Paul; and Petrucco, Richard J., to Mobil Oil Corporation. Grease compositions. 3,705,853, Cl. 252-36.000.

Federal-Mogul Corporation: *See—*
Haller, John, 3,705,509.

Fenner, David Fentom, to National Research Development Corporation. Apparatus for use in focussing images. 3,705,765, Cl. 353-101.000.

Ferris, James E., to Eastman Kodak Compan. Dispensing device for pocketed envelopes. 3,705,664, Cl. 221-47.000.

Fertig, Kenneth: *See—*
Cox, Duncan B., Jr.; and Fertig, Kenneth, 3,706,092.

Fey, Maurice G.: *See—*
Wolf, Charles B.; and Fey, Maurice G., 3,705,975.

Fiat Societa per Azioni: *See—*
Palazzetti, Mario; and Cavaliarin, Bruno, 3,705,573.

Filper Corporation: *See—*
Riley, Lloyd D., 3,705,475.

Finch, Theron R.: *See—*
Sykes, Donald J.; Kroll, Harry; and Finch, Theron R., 3,705,806.

Finger, Eugene P.: *See—*
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Firestone Tire & Rubber Company, The: *See—*
Schonfeld, Steven Edward, 3,705,881.

Fischer, Alfred, to Tenneco Chemicals, Inc. Stable solutions of calcium salts. 3,705,852, Cl. 252-1.000.

Fish, Leonard A.: *See—*
Cox, Robert P.; and Fish, Leonard A., 3,705,669.

Fisher, Richard M.: *See—*
Jacovides, Linos J.; Lyon, David M.; and Fisher, Richard M., 3,705,971.

Fisher, William M., to Atlantic Merchandising Company. Clothes hanger carrier. 3,705,674, Cl. 224-45.00t.

Fisons Pharmaceuticals Limited: *See—*
Fitzmaurice, Colin; and Lee, Thomas Brian, 3,705,945.

Fitzmaurice, Colin; and Lee, Thomas Brian, to Fisons Pharmaceuticals Limited. Pharmaceutically active compounds. 3,705,945, Cl. 424-283.000.

Flasch, Josef: *See—*
Stieger, Gerhard; and Flasch, Josef, 3,705,862.
Stieger, Gerhard; and Flasch, Josef, 3,705,864.

Fleischmann, Horst: *See—*
Stosberg, Herbert; Fleischmann, Horst; Reinhards, Gunter; and Engels, Siegfried, 3,705,438.

Florea, Valer: *See—*
Grigorovici, Radu G.; Devenyi, Andrei Gavrila; Florea, Valer; Korony, Gheorghe; Belu, Aretia; and Costachescu, Carol, 3,705,993.
Flotti Puppenkleiderspiele Gesellschaft mit beschrankter Haftung: *See—*
Schroner, Wera, 3,705,427.
Folgate, Kent R., to General Electric Company. Attitude control system. 3,705,977, Cl. 235-150.250.
Follows, Alan G.: *See—*
Garofano, Norman R.; and Follows, Alan G., 3,705,790.
Fomina, Alexandr Sergeevna: *See—*
Mikhelis, Konstantin Alexandrovich; Fomina, Alexandr Sergeevna; Murumets, Kirill Vladimirovich; Ulanen, Yalmar Semenovich; Kotov, Anatoly Mikhailovich; Volkov, Timofei Mikhailovich; Itsikson, Boris Semenovich; Suurmaa, Raivo Alexandrovich; Viks, Paavo Yaanvich; and Berestovsky, Georgy Grigorievich, 3,705,793.
Foster Wheeler Corporation: *See—*
Bow, William J.; and Pollard, Richard J., 3,705,494.
Foster-Pegg, Richard W. Jet engine air compressor. 3,705,491, Cl. 60-39.550.
Fox, Charles J.; and Johnson, Arthur L., to Eastman Kodak Company. Electrophotographic sensitizers. 3,705,913, Cl. 260-391.000.
Francis, James G.; and Pasley, Robert H., Sr., to Royalty Designs of Florida. Fabric-carried plastic article. 3,705,836, Cl. 161-94.000.
Francis, James G.; and Pasley, Robert H., Sr., to Royalty Designs of Florida. Process for forming fabric-carried plastic article. 3,705,935, Cl. 264-257.000.
Franz, Norman C. Means for sealing fittings and nozzle assembles at extremely high fluid pressures. 3,705,693, Cl. 239-600.000.
Fraser, George Herbert: *See—*
Bourgault, Pierre Louis; and Fraser, George Herbert, 3,706,013.
Fredrickson, Walter G.; Heitmann, Albert W.; and Jones, George M., to Harris-Intertype Corporation. Apparatus for editing and correcting displayed text. 3,706,075, Cl. 340-172.500.
French, Eric Ancelot: *See—*
Culvenor, Claude Charles Joseph; Edgar, John Alexander; Smith, Leslie Walter; Tweeddale, Helen Joan; Jago, Marjorie; and French, Eric Ancelot, 3,705,905.
Frese, Albert, to Chemische Werke Huels, Aktiengesellschaft. Viscous compositions and process for the production thereof. 3,705,884, Cl. 260-80.780.
Frick, Wilhelm E.; Harle, Horst; and Wenger, Thomas, to Ciba-Geigy Corporation. Compositions and methods using 2-phenylbenzimidazoles. 3,705,944, Cl. 424-273.000.
Friedman, Mitchell; Kamentsky, Louis A.; and Klinger, Isaac, to Bio/Physics Systems, Inc. Photoanalysis apparatus. 3,705,771, Cl. 356-39.000.
Friedman, Paul: *See—*
Cutler, Lester M.; and Friedman, Paul, 3,705,578.
Fript, Leonard T., to Medline Industries, Inc. Stabilized syringe assembly. 3,705,584, Cl. 128-232.000.
Fritsch, Walter; Hetzinger, Erich; and Worner, Karl, to Pebra GmbH, Braun, Paul. Locks. 3,705,508, Cl. 70-373.000.
Fuji Photo Film Co., Ltd.: *See—*
Famai, Yasuo; and Fukushima, Osamu, 3,705,767.
Kasugai, Tsuneo; Minagawa, Nobuhiko; and Kurabayashi, Hiroyuki, 3,705,808.
Nakazawa, Giyoshiyuki; Nakamura, Yashuharo; Takei, Haruo; Sato, Akira; and Ikeda, Tadashi, 3,705,809.
Fujimoto, Yasuo; Teranishi, Masayuki; and Tezuka, Toshihiko, to Kyowa Hakko Kogyo Co., Ltd. Poly-gamma-substituted glutamate solutions containing alcohols. 3,705,873, Cl. 260-33.40r.
Fujisawa, Masakatsu, to American Safety Equipment Corporation. Adjustable temple for eyeglasses. 3,705,761, Cl. 351-118.000.
Fujitsu Limited: *See—*
Mori, Takashi; and Yoshikawa, Tatsuya, 3,706,077.
Takahashi, Hiroaki; and Hara, Toshito, 3,705,796.
Fukazawa, Nobuo: *See—*
Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,705,929.
Fukui, Hiroshi; Iwatsu, Gakuji; and Kato, Junichi, to Aichi Steel Works Limited. High efficiency leaf spring. 3,705,718, Cl. 267-47.000.
Fukushima, Osamu: *See—*
Famai, Yasuo; and Fukushima, Osamu, 3,705,767.
Fukuura, Yukio: *See—*
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Fulton, Theodore Alan: *See—*
Dynes, Robert Carr; and Fulton, Theodore Alan, 3,706,064.
Gach, Peter P., to Sunbeam Plastics Corporation. Safety closure for medicine bottles and the like. 3,705,662, Cl. 215-9.000.
Gainesville Machine Company, Inc.: *See—*
Lewis, Ernest E., 3,705,440.
Gargini, Eric J., to Communications Patents Limited. Wired broadcasting systems with phantom circuit supplying control current on program signal wires. 3,706,040, Cl. 325-308.000.
Garmaise, David Lyon; Paris, Gerard Yvon; and Plotnikoff, Nicholas Peter, to Abbott Laboratories. Certain 2-aralkyl-8-fluoro-1,2,3,4-tetrahydro-5 propionyl-pyrido [3,4-e] indoles. 3,705,902, Cl. 260-295.00c.
Garnier, Georges, to Roto Diesel. Electromagnetic injectors. 3,705,692, Cl. 239-585.000.
Garofano, Norman R.; and Follows, Alan G., to Allied Chemical Corporation. Process for increasing bulk density of sodium carbonate by the addition of calcium ion. 3,705,790, Cl. 23-302.000.
Garzon, Ruben D., to I-T-E Imperial Corporation. Instrument for measurement of energy of an interrupting device. 3,706,033, Cl. 324-140.00r.
Gauthier, Oscar. Device for medical use. 3,705,580, Cl. 128-79.000.
Gebhart, Norman L.: *See—*
Brooks, Frank W.; and Gebhart, Norman L., 3,705,641.
Gebr. Boehler & Co., AG: *See—*
Rajakovics, Gundolf E., 3,705,734.
Geiger, Willard L., to Erico Products, Inc. Railway signal system. 3,706,098, Cl. 246-40.000.
Geigy Chemical Corporation: *See—*
Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., 3,705,918.
General Binding Corporation: *See—*
Azato, Robert N., 3,705,706.
General Electric Company: *See—*
Diehl, Max H., 3,705,952.
Farnsworth, Richard G., 3,706,086.
Folgate, Kent R., 3,705,977.
Gillett, Colin, 3,706,063.
Hirst, Robert G.; and Desnoyers, George J., 3,705,826.
Hopkinson, Philip J., 3,706,058.
Judd, Edwin B., 3,706,062.
Loika, Alexander, Jr., 3,706,061.
Padgett, George L., 3,705,502.
Reitz, Roderick, 3,706,009.
General Fireproofing Company, The: *See—*
Textoris, Melvin A., 3,705,704.
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Mowrey, Albert C.; Huiskes, John H.; and Brand, Abraham, 3,706,085.
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Bierlein, John C.; De Hart, Arnold D.; and Handwerker, Louis W., Jr., 3,705,753.
Brewer, Lee M.; and Rohde, Robert P., 3,705,685.
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Carlson, Richard A., 3,706,005.
Carpenter, Keith H., 3,705,520.
Colling, Ronald L.; and Trenne, Myron U., 3,705,639.
Hanson, Richard J., 3,706,067.
Huntzinger, Gerald O.; and Bassett, Norris J., 3,706,089.
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McDougal, John A.; and Schwartzwalder, Karl, 3,705,558.
Ogawa, Fremont T., 3,705,522.
Rausch, John T.; and Skunda, Michael, 3,705,951.
Sayre, Robert E.; Campbell, Lewis B.; and Pietrzak, Joe P., 3,705,831.
Smale, Charles H., 3,705,688.
Smith, Marion D., 3,705,521.
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Georgia-Pacific Corporation: *See—*
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Gerzon, Koert; and Holmes, Richard E., to Lilly, Eli, and Company. Mycophenolic acid derivatives. 3,705,894, Cl. 260-240.00r.
Gesing, Horst: *See—*
Schimmer, Rigobert; Gesing, Horst; and Cordes, Karl-Heinz, 3,706,015.
Giannii, Michele. Method for the covering of moldable articles (in particular, the heels and soles of shoes). 3,705,934, Cl. 264-219.000.
Gilbert, LeLand Glen: *See—*
Hunger, Richard H.; and Gilbert, LeLand Glen, 3,705,656.
Gillett, Colin, to General Electric Company. Type (S) fuse automation. 3,706,063, Cl. 337-262.000.
Gilmour, Richard C.; Kaitz, Vincent A.; and Lemberger, Adolph W., to Budd Company, The. Die unloader. 3,705,525, Cl. 83-112.000.
Gingrich, John A., to Dover Corporation (Canada) Limited. Motor speed control. 3,706,017, Cl. 318-146.000.
Girault, Pierre: *See—*
Assouline, George; Conjeaud, Pierre; Girault, Pierre; and Leiba, Eugene, 3,705,955.
Glass, Marvin, & Associates: *See—*
Breslow, Jeffrey D., 3,705,727.
Glenn, Edwin E., Jr.; Slover, Vasel R.; and Sirughar, Malcolm K., to Mobil Oil Corporation. Oil well flow control method. 3,705,626, Cl. 176-267.000.
Globe Tool and Engineering Company, The: *See—*
Biddison, John M., 3,705,459.
Go, Tadahiro: *See—*
Matsuo, Toshiaki; Chono, Koji; Go, Tadahiro; and Komai, Hirotaka, 3,705,880.
Gold, Nicholas, to Polaroid Corporation. Photographic film cartridge. 3,705,542, Cl. 95-19.000.
Goldsmith, David S. Translational rotational and vertical movement controlled sound source pick-up system. 3,705,957, Cl. 179-1.0gp.
Golick, A. J.: *See—*
Stephan, John T.; and Golick, A. J., 3,705,832.

Goodman, Ernest A., to Allis Chalmers Manufacturing Company. Series-multiple transformer. 3,706,060, Cl. 336-147.000.
Goodman, H., & Sons, Inc.: *See—*
Jennis, Murray, 3,705,591.
Goodrich, B. F., Company, The: *See—*
Skillicorn, Douglas E., 3,705,882.
Gordini, Silvano: *See—*
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Gordon, Sherritt Mines, Limited: *See—*
Vaneldik, Jan Frederik; Wilson, Ronald Ian; Kampjes, Gerrie Richard; and Lavender, William James, 3,705,478.
Goto, Kenjiro, to Mansei Kogyo Kabushiki Kaisha. Valve for use in gas fueled cigarette lighters. 3,705,785, Cl. 431-344.000.
Gotte, August. Vacuum flotation device. 3,705,650, Cl. 210-221.000.
Grace, W. R., & Co.: *See—*
Breslauer, Charles S., 3,705,837.
Graubremse GmbH: *See—*
Juttner, Alwin; and Gruner, Hans, 3,705,614.
Gray, Stephen B., to Information International, Inc. Binary image processor. 3,706,071, Cl. 340-146.30q.
Gray, Thomas Edward Horace: *See—*
Hurst, Norman Ashcroft; Gray, Thomas Edward Horace; and Jones-Hinton, James, 3,705,932.
Greenley, Henry R.; and Craig, William E., said Greenley assor. to Porter, C. O., Machinery Company and said Craig assor. to Computer Specialties Corporation. Digital command control sequencer and machine controlled thereby. 3,706,072, Cl. 340-147.00p.
Greenwood, Eugene C. Lock nut assembly and bolt and wrench for use therewith. 3,705,524, Cl. 81-121.00r.
Greiner, Leonard; and Courtney, Welby G., to Texaco Inc. Fuel systems and oxidizers. 3,705,495, Cl. 60-214.000.
Grice, Karl R., Jr.; and Edwards, Dan M. Materials counting system utilizing permanent magnets and their associated fields. 3,706,027, Cl. 324-34.00r.
Grigoriyants, Sergei Mikhailovich: *See—*
Podolsky, Viktor Grigorievich; Balkarei, Iosif Mikhailovich; and Grigoriyants, Sergei Mikhailovich, 3,705,702.
Grigorovici, Radu G.; Devenyi, Andrei Gavrila; Florea, Valer; Korony, Gheorghe; Belu, Aretia; and Costachescu, Carol, to Institutul de Fizica. Piezoresistive transducers and devices with semiconducting films and their manufacturing process. 3,705,993, Cl. 10-8.100.
Grosseau, Albert, to Societe Anonyme Automobiles Citroen. Methods of coating rubbing surfaces and element comprising such surfaces. 3,705,818, Cl. 117-71.00m.
Grosselfinger, Josef: *See—*
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Grundig E. V. Elektro Mechanische Versuchsunstaft: *See—*
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Gruner, Hans: *See—*
Juttner, Alwin; and Gruner, Hans, 3,705,614.
Grunwaldt, Edgar, to Ciba-Geigy Corporation. Treatment of glaucoma employing imipramine or desmethylimipramine. 3,705,942, Cl. 424-244.000.
Guidi, Guido N.: *See—*
Kahl, Gerald J.; and Guidi, Guido N., 3,705,533.
Gulf and Western Industries, Inc.: *See—*
Eikenberry, Willis M., 3,706,070.
Gulf Oil Canada Limited: *See—*
Scott, William Bruce; and Simpson, Peter Laurence, 3,705,909.
Gunkel, Otto: *See—*
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Gunkel, Otto, to Gunkel, Otto. Fruit press. 3,705,546, Cl. 100-118.000.
Gunning, Paul E., to Osmose Wood Preserving Co. of America, Inc. Deicer compositions. 3,705,854, Cl. 252-70.000.
Gunzel, Gerhard, to Licentia Patent-Verwaltungs, G.m.b.H. Amplifier circuit. 3,706,047, Cl. 330-24.000.
Gunzler, Thomas. Single-copy vending machines for newspapers. 3,705,665, Cl. 221-188.000.
Gurgui, Constantin; Luca, Vasile; Eckardt, Andrei; and Ciulacu, Paraschiv, to Intreprinderea "Bucuresti" Pentru Extrazerea Prelucrarea Si Montarea Marmurei Si Pietrei de Constructir. Process for finishing the surface of a building. 3,705,830, Cl. 156-71.00.
Gurkov, Konstantin Stepanovich: *See—*
Sudnishnikov, Boris Vasilievich; Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tupitsyn, Konstantin Konstantinovich; and Plavskikh, Vladimir Dmitrievich, 3,705,633.
Gurney, John A.: *See—*
Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., 3,705,918.
Gustavsson, Pertti O., to Prym-Werke, William, KG. Apparatus for processing slide fasteners. 3,705,446, Cl. 29-34.00a.
Gutlbauer, Franz: *See—*
Knotik, Karl; and Gutlbauer, Franz, 3,705,820.
Gutlhuber, Johann: *See—*
Jirka, Karl; Gutlhuber, Johann; and Straubing, Irlbach B., 3,705,950.
H Inc.: *See—*
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Haas, Gunter, to Kalle Aktiengesellschaft. Apparatus for the corona treatment of plastics. 3,705,844, Cl. 204-312.000.
Haberlin, Richard J.: *See—*
Farney, Leonard C.; and Haberlin, Richard J., 3,705,804.
Hack, Helmuth: *See—*
Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,705,929.
Hadberg, Edward J., to United States Steel Corporation. Rotary furnace door design. 3,705,717, Cl. 266-24.000.
Halbeck, Werner B.; Quaal, John A.; and Robbins, Clyde F., to Cutler-Hammer, Inc. Remote control circuit breaker system. 3,706,100, Cl. 317-58.000.
Hall, Lewis W., Jr.: *See—*
Hollstein, Elmer J.; and Hall, Lewis W., Jr., 3,705,885.
Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., to Geigy Chemical Corporation. Polysubstituted dihydropyrenes. 3,705,918, Cl. 260-464.000.
Haller, John, to Federal-Mogul Corporation. Fluid-conducting hot-forging die and method of making the same. 3,705,509, Cl. 72-45.000.
Halliburton Company: *See—*
Rensvold, Roger F., 3,705,782.
Hamburg, Karl-Heinz, to Peters, Claudius, Aktiengesellschaft. Two-stage material cooler. 3,705,620, Cl. 165-104.000.
Hammack, Calvin Miles. Polystation doppler system tracking of vehicles, measuring displacement and rate thereof and similar applications. 3,706,096, Cl. 343-9.000.
Hammann, Igeborg: *See—*
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Hammann, Ingeborg: *See—*
Stolzer, Claus; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,705,928.
Hammelmann, Paul. Arrangement for treating upright surfaces. 3,705,565, Cl. 114-222.000.
Handwerker, Louis W., Jr.: *See—*
Bierlein, John C.; De Hart, Arnold D.; and Handwerker, Louis W., Jr., 3,705,753.
Hanson, Cleo E.: *See—*
Tuschhoff, John V.; and Hanson, Cleo E., 3,705,891.
Hanson, Richard J., to General Motors Corporation. Electrical connector assembly. 3,706,067, Cl. 339-45.00m.
Hanyu, Susumu; and Amano, Takashi, to Janome Sewing Machine Co. Ltd. Rotary shuttle for sewing machines. 3,705,562, Cl. 122-232.000.
Hara, Toshito: *See—*
Takahashi, Hiroaki; and Hara, Toshito, 3,705,796.
Harada, Michisuke: *See—*
Shibata, Minoru; Yusa, Makoto; Nakata, Hisao; and Harada, Michisuke, 3,705,866.
Harle, Horst: *See—*
Frick, Wilhelm E.; Harle, Horst; and Wenger, Thomas, 3,705,944.
Harmuth, Henning Friedolf, to International Telephone and Telegraph Corporation. Sequency filters based on Walsh functions for signals with two space variables. 3,705,981, Cl. 235-193.000.
Harris, Hugh A. Carpet roll carrier attachment. 3,705,658, Cl. 214-620.000.
Harris Intertype Corporation: *See—*
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Harris-Intertype Corporation: *See—*
Fredrickson, Walter G.; Heitmann, Albert W.; and Jones, George M., 3,706,075.
Hartman, Pierre: *See—*
Dieulesaint, Eugene Jean; and Hartman, Pierre, 3,706,055.
Harvey, Charles V. Snowmobile suspension system. 3,705,637, Cl. 180-5.00r.
Harvey, Charles V. Suspension system for snowmobiles. 3,705,749, Cl. 305-27.000.
Hawk, Daniel E., to Mobil Oil Corporation. Drive train for logging-while-drilling tool. 3,705,603, Cl. 137-624.140.
Hawley Manufacturing Corporation: *See—*
Overmyer, Robert C.; and Nordman, Adolph J., 3,705,545.
Hayashibara Company: *See—*
Yoshida, Mikihiko; Mitsuhashi, Masakazu; and Hidao, Mamoru, 3,705,811.
Heck, Richard F., to Hercules Incorporated. Reactions of organometallic compounds of platinum and palladium group VIII metals with ethylenically unsaturated compounds. 3,705,919, Cl. 260-491.000.
Heggen, John Peter, to Clark Equipment Company. Combination relief and check valve. 3,705,600, Cl. 137-493.200.
Heidenhain, Johannes, Dr., Firma: *See—*
Ernst, Alfons; and Jung, Werner, 3,705,518.
Heinz, Freiwald; and Karl-Heinz, Eggert, to BAT-Cegaretten-Fabriken GmbH. Apparatus for applying bronze powder to a continuously moving paper web. 3,705,568, Cl. 118-57.000.
Heitmann, Albert W.: *See—*
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Heitmann, Gunter, to Metallgesellschaft Aktiengesellschaft. Process of directly reducing materials containing iron oxide in a rotary kiln. 3,705,795, Cl. 75-36.000.
Heller, William C., Jr.: *See—*
Heller, William C., Jr.; Leatherman, Alfred F.; and Christian, Robert L. (said Leatherman and said Christian assors. to said), 3,705,819.

Heller, William C., Jr.; Leatherman, Alfred F.; and Christian, Robert L., said Leatherman and said Christian assors. to said Heller, William C., Jr. Drying by induction heating. 3,705,819, Cl. 117-93.200.
Helseth, Richard Lee: *See—*
Dunphy, Kenneth Robert; and Helseth, Richard Lee, 3,705,636.
Hendrickson, Thomas N., to Eastman Kodak Company. Monitoring silver recovery. 3,705,716, Cl. 266-22.000.
Hennart, Claude; Martin, George; Mandon, Jean-Pierre; and Rabussier, Bernard Aranton, to Ciba-Geigy AG. Vaporizable insecticide composition. 3,705,941, Cl. 424-219.000.
Hercules Incorporated: *See—*
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Boylan, Francis J., 3,705,859.
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Herziger, Gerd Bernd: *See—*
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Hicks, Thomas D. Molding core grit. 3,705,863, Cl. 260-22.0tn.
Hidao, Mamoru: *See—*
Yoshida, Mikihiko; Mitsuhashi, Masakazu; and Hidao, Mamoru, 3,705,811.
Hilberg, Wolfgang, to Licentia Patent-Verwaltungs, GmbH. Memory storage matrix with line input and complementary delay at output. 3,706,078, Cl. 340-173.00r.
Himmelmann, Wolfgang: *See—*
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Hintze, Melvin M.; Mari, John P.; McDaniel, Roy F.; and Evel, Eddie A., to Martin-Marietta Corporation. Analog majority voting circuit. 3,706,044, Cl. 328-137.000.
Hirane, Seiichi: *See—*
Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,705,929.
Hirst, Robert G.; and Desnoyers, George J., to General Electric Company. Insulating coating and method of making the same. 3,705,826, Cl. 148-6.160.
Hiruta, Shiro: *See—*
Ishikawa, Tatsuo; Hiruta, Shiro; Wakabayashi, Teruomi; Inamoto, Yoshihiko; Kusunose, Tethiro; Tsumaki, Tatsuichi; and Ota, Masami, 3,705,877.
Hitachi, Ltd.: *See—*
Akatsu, Mitsuharu; Kinoshita, Tomoo; and Iwasaki, Tadahiko, 3,706,003.
Hjelmquist, Stig Gunnar. Lawn-mowers with horizontally rotating knives. 3,705,484, Cl. 56-320.200.
Hobo, Nobuhito, to Nippondenso Kabushiki Kaisha. Dividing circuit using monostable multivibrator. 3,705,991, Cl. 307-273.000.
Hobson, David J.: *See—*
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Hoehn, Wolfgang, to ITT Industries, Inc. Integrable revolution measuring circuit with supply voltage transient suppression. 3,706,035, Cl. 324-169.000.
Hoffmann, Hellmut: *See—*
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Hogg, Walter R.: *See—*
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Holliday, Robert G., to Xerox Corporation. Fiche cleaning element. 3,705,436, Cl. 15-210.00r.
Hollins, Jesse R. Vehicle engine emissions control system. 3,705,497, Cl. 60-283.000.
Hollstein, Elmer J.; and Hall, Lewis W., Jr., to Standard Oil Company. Process for the recovery of essentially pure amorphous polyolefins. 3,705,885, Cl. 260-93.700.
Holm, Svend Age, to Danfoss A/S. Method of producing a toothed ring for an internal-shaft meshing rotary piston engine. 3,705,619, Cl. 51-287.000.
Holmes, David Alan, to Du Pont de Nemours, E. I., and Company. Reduced sludge formation in large particle tetrafluoroethylene polymer aqueous dispersion. 3,705,867, Cl. 260-29.60f.
Holmes, Richard E.: *See—*
Gerzon, Koert; and Holmes, Richard E., 3,705,894.
Holtz, Carl F.: *See—*
Bello, Hobson J.; and Holtz, Carl F., 3,705,799.
Bevis, Michael J.; Bello, Hobson J.; and Holtz, Carl F., 3,705,803.
Holtz, Carl F., to Eastman Kodak Company. Film containing bleach-inhibitor-releasing compounds and process for preparing silver auxiliary and sound records. 3,705,801, Cl. 96-4.000.
Hon Industrs Inc.: *See—*
Drum, James R.; and Temple, Philip A., 3,705,754.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Koyama, Mikihiro; and Inagaki, Takashi, 3,705,733.
Honda, Toshio; Kubota, Eishi; Fukuura, Yukio; and Kobayashi, Yoneji, to Bridgestone Tire Company Limited. Adhesive for adhering a polyester fibrous material or an inorganic material with a rubber and method thereof. 3,705,868, Cl. 260-29.70r.
Honeywell Inc.: *See—*
Lee, Tzuo-Chang, 3,706,080.
Maskal, Haim, 3,705,758.
Pileckis, John, 3,705,990.
Regitz, William M.; and Dundon, Thomas M., 3,706,084.
Warren, James S., 3,705,783.
Honma, Shiro: *See—*
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Hopkinson, Philip J., to General Electric Company. Magnetic tripping mechanism for thermal circuit breaker. 3,706,058, Cl. 335-174.000.
Horn, John W.; and Rachel, Todd L., to Bendix Corporation, The. Hot start auxiliary circuit for electronic fuel control system. 3,705,571, Cl. 123-32.0ea.
Horstmann Gear Co., Ltd., The: *See—*
Dee, Colin W., 3,705,751.
Hosokawa, Kenjiro; and Ichikawa, Michio, to Kanegafuchi Boseki Kabushiki Kaisha. Method of coating fibrous structure with a mixture of polyurethane prepolymer and polorganosiloxane. 3,705,823, Cl. 117-161.0kp.
Howe, Donald R.: *See—*
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Hruby, John O., Jr., to Ram Jet Corporation. Flow controlling support base for ornamental fountains. 3,705,686, Cl. 239-22.000.
Hubby, Laurence M., to Texaco Inc. Methods for controlling pumping wells. 3,705,532, Cl. 73-155.000.
Huber, Douglas B., to Polacoat, Inc. Rear projection screen. 3,705,757, Cl. 350-126.000.
Hughes Aircraft Company: *See—*
Wilmot, Richard D.; and Ballantyne, Jack R., 3,705,936.
Huiskes, John H.: *See—*
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Hummel, Jack L.: *See—*
Argabright, Perry A.; Hummel, Jack L.; and Presley, C. T., 3,705,627.
Hunger, Richard H.; and Gilbert, LeLand Glen, to Deere & Company. Quick-attach loader bucket. 3,705,656, Cl. 214-145.000.
Hunt, Theodore C. Safety motor mount. 3,705,701, Cl. 248-9.000.
Huntzinger, Gerald O.; and Bassett, Norris J., to General Motors Corporation. Lamp failure indicator. 3,706,089, Cl. 340-253.00n.
Hurst, Norman Ashcroft; Gray, Thomas Edward Horace; and Jones-Hinton, James. Method for the manufacture of hollow plastic articles. 3,705,932, Cl. 264-89.000.
Hussar, Joseph P.: *See—*
Evans, Robert P.; Hussar, Joseph P.; Evans, Gerald R.; and Dunn, Robert T., 3,705,960.
Hydrocarbon Research, Inc.: *See—*
Alpert, Seymour B.; and Chervenak, Michael C., 3,705,849.
Wolk, Ronald H., 3,705,850.
Hyman, Seymour; Bernstein, Bruce S.; and Kapoor, Ramesh, said Bernstein and said Kapoor assors. to Hercules Protective Fabric Corporation. Activated polymer materials and process for making same. 3,705,938, Cl. 424-19.000.
I-T-E Imperial Corporation: *See—*
Garzon, Ruben D., 3,706,033.
Ichikawa, Michio: *See—*
Hosokawa, Kenjiro; and Ichikawa, Michio, 3,705,823.
IIT Research Institute: *See—*
Camras, Marvin, 3,705,954.
Ikeda, Tadashi: *See—*
Nakazawa, Giyoshiyuki; Nakamura, Yashuharo; Takei, Haruo; Sato, Akira; and Ikeda, Tadashi, 3,705,809.
Ilco Corporation: *See—*
Adler, Norman R., 3,705,739.
Illinois Tool Works Inc.: *See—*
Sygnator, Henry A., 3,705,442.
Imperial Chemical Industries Limited: *See—*
Morman, James Forrester, 3,705,589.
Pickles, Cynthia Joan; and Bishop, Nigel Douglas, 3,705,914.
Inagaki, Takashi: *See—*
Koyama, Mikihiro; and Inagaki, Takashi, 3,705,733.
Inamoto, Yoshihiko: *See—*
Ishikawa, Tatsuo; Hiruta, Shiro; Wakabayashi, Teruomi; Inamoto, Yoshihiko; Kusunose, Tethiro; Tsumaki, Tatsuichi; and Ota, Masami, 3,705,877.
Industriele Onderneming Wavin N.V.: *See—*
Van Zon, Cornelis, 3,705,779.
Information International, Inc.: *See—*
Gray, Stephen B., 3,706,071.
Institut fur Angewandte Physik der Universitat Bern: *See—*
Banse, Karlheinz Victor Hermann; Seelig, Wolfgang Hagen; Steinger, Jurg Hugo; and Herziger, Gerd Bernd, 3,705,999.
Institut Gornogo Dela Sibirskogo otdelenia Akademii: *See—*
Sudnishnikov, Boris Vasilievich; Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tupitsyn, Konstantin Konstantinovich; and Plavskikh, Vladimir Dmitrievich, 3,705,633.
Institutul de Fizica: *See—*

Grigorovici, Radu G.; Devenyi, Andrei Gavrila; Florea, Valer; Korony, Gheorghe; Belu, Aretia; and Costachescu, Carol, 3,705,993.

Intel Corporation: *See—*
Vadasz, Leslie L.; and Karp, Joel A., 3,706,079.

International Telephone and Telegraph Corporation: *See—*
Harmuth, Henning Friedolf, 3,705,981.

Intreprinderea "Bucuresti" Pentru Extraz.ea Prelucrarea Si Montarea Marmurei Si Pietrei de Constructir: *See—*
Gurgui, Constantin; Luca, Vasile; Eckardt, Andrei; and Ciulacu, Paraschiv, 3,705,830.

Inuaki, Akira: *See—*
Oshima, Yasuo; Nakazawa, Nobuhiko; Nagasaki, Senkichi; Naito, Takeo; Osada, Yasuaki; Okusa, Naoya; Inuaki, Akira; and Tanaka, Kazuyuki, 3,705,989.

Inventa AG: *See—*
Schultze, Hans-Joachim, 3,705,682.

Ippen, Erich Peter; Patel, Chandra Kumar Naranbhai; and Stolen, Rogers Hall, to Bell Telephone Laboratories, Incorporated. Broadband tunable Raman-effect devices in optical fibers. 3,705,992, Cl. 307-88.300.

Irmscher, Klaus; and Bruckner, Klaus, to Merck, E., A.G. 3-Methyl-17a-ethynyl-19-nor-3, 5-androstadiene-17β-ol. 3,705,915, Cl. 260-397.500.

Irving, Brian Arthur: *See—*
Davidson, David Fulton; and Irving, Brian Arthur, 3,705,735.

Ishikawa, Tatsuo; Hiruta, Shiro; Wakabayashi, Teruomi; Inamoto, Yoshihiko; Kusunose, Tethiro; Tsumaki, Tatsuichi; and Ota, Masami, to Asahi Kasei Kogyo Kabushiki Kaisha. Antistatic synthetic resin compositions containing trazine derivatives. 3,705,877, Cl.260-75.00m.

Itsikson, Boris Semenovich: *See—*
Mikhelis, Konstantin Alexandrovich; Fomina, Alexandr Sergeevna; Murumets, Kirill Vladimirovich; Ulanen, Yalmar Semenovich; Kotov, Anatoly Mikhailovich; Volkov, Timofei Mikhailovich; Itsikson, Boris Semenovich; Suurmaa, Raivo Alexandrovich; Viks, Paavo Yaanvich; and Berestovsky, Georgy Grigorievich, 3,705,793.

ITT Industries, Inc.: *See—*
Hoehn, Wolfgang, 3,706,035.

Iwakami, Takuya, to Nippon Electric Company, Limited. Synthesized network for signal transmission. 3,706,053, Cl. 333-23.000.

Iwaoka, Seijiro; and Mori, Hiroo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Brake and clutch control for industrial track. 3,705,643, Cl. 192-13.00a.

Iwasaki, Tadahiko: *See—*
Akatsu, Mitsuharu; Kinoshita, Tomoo; and Iwasaki, Tadahiko, 3,706,003.

Iwatsu, Gakuji: *See—*
Fukui, Hiroshi; Iwatsu, Gakuji; and Kato, Junichi, 3,705,718.

Jacob, Jean-Baptiste, to C.I.T.-Compagnie Industrielle des Telecommunications and Societe Lannionaise d'Electroniqise. Path testing device for time channel connection network. 3,705,958, Cl. 179-18.00j.

Jacovides, Linos J.; Lyon, David M.; and Fisher, Richard M., to General Motors Corporation. Induction motor fabrication method. 3,705,971, Cl. 219-121.0eb.

Jago, Marjorie: *See—*
Culvenor, Claude Charles Joseph; Edgar, John Alexander; Smith, Leslie Walter; Tweeddale, Helen Joan; Jago, Marjorie; and French, Eric Ancelot, 3,705,905.

Jankowski, Alfons; and Schuermann, Fritz, to Bergwerksverband GmbH. Cartridge for fixing anchor elements in holes of a support structure. 3,705,646, Cl. 206-47.00a.

Janome Sewing Machine Co. Ltd.: *See—*
Hanyu, Susumu; and Amano, Takashi, 3,705,562.

Japanese Geon Company Ltd., The: *See—*
Matsuo, Toshiaki; Chono, Koji; Go, Tadahiro; and Komai, Hirotaka, 3,705,880.

Jarrell, Virgil N.; and Towson, Arthur L., to Chisholm-Ryder Company, Inc. Multi-row, multi-crop harvester. 3,705,483, Cl. 56-13.500.

Jehle, William Robert, to Union Carbide Corporation. Nitrogen spray refrigeration system for perishables. 3,705,500, Cl. 62-223.000.

Jennings, Thomas A.; and McNeill, William, to United States of America, Army. Negative ion generator. 3,705,998, Cl. 313-161.000.

Jennis, Murray, to Goodman, H., & Sons, Inc. Hinged barrettes. 3,705,591, Cl. 132-48.00r.

Jirka, Karl; Gutlhuber, Johann; and Straubing, Irlbach B., to Kunststoffwerk Gebruder Anger G.m.b.H. & Co. Sealed connector box for electrical cables. 3,705,950, Cl. 174-138.00f.

Johannsmeier, Karl-Heinz. Optical alignment and contact printing system with improved chuck assembly. 3,705,769, Cl. 355-91.000.

Johansson, Rolf Anders. Apparatus for slip-forming. 3,705,776, Cl. 425-65.000.

Johmann, Frank T. Pointer spinning mechanical dolls. 3,705,726, Cl. 273-151.00a.

Johnson, Arthur L.: *See—*
Fox, Charles J.; and Johnson, Arthur L., 3,705,913.

Johnson, Dewey F. Chain door latch device. 3,705,504, Cl. 70-93.000.

Johnson Matthey & Mallory Limited: *See—*
Bourgault, Pierre Louis; and Fraser, George Herbert, 3,706,013.

Johnson Service Company: *See—*
Laakaniemi, Richard N.; Kuczkowki, Frank A.; Atkinson, Louis D.; Kuhar, Paul W.; Lechner, Thomas J., Jr.; and Weber, Urban A., 3,705,595.

Johnson, Thomas E., Jr.; and Mould, Peter R., to United States Steel Corporation. Apparatus for determining resonant frequencies of a specimen of magnetostrictive material. 3,706,026, Cl. 324-34.0ma.

Johnston, Stephen L., to United States of America, Army. Indirect frequency multiplication system. 3,706,048, Cl. 331-53.000.

Jones, George M.: *See—*
Fredrickson, Walter G.; Heitmann, Albert W.; and Jones, George M., 3,706,075.

Jones, John Leslie, Jr.: *See—*
Jones, John Leslie, Sr.; and Jones, John Leslie, Jr., 3,705,677.

Jones, John Leslie, Sr.; and Jones, John Leslie, Jr. Receipt binders. 3,705,677, Cl. 226-196.000.

Jones, Robert C.; and Siebert, William, Jr., to Varian Associates. Graphic recorder employing a reservoir lettering pen type stylus. 3,706,099, Cl. 346-140.000.

Jones, Stanley W.: *See—*
Nye, William M.; and Jones, Stanley W., 3,705,961.

Jones-Hinton, James: *See—*
Hurst, Norman Ashcroft; Gray, Thomas Edward Horace; and Jones-Hinton, James, 3,705,932.

Jorgensen, Aage Hojgaard, to Danfoss A/S. Switching means for an alarm system. 3,706,088, Cl. 340-248.00r.

Jouet, Etienne; and Rebuffe, Pascal. Heat exchanger. 3,705,618, Cl. 165-166.000.

Judd, Edwin B., to General Electric Company. Remake proof time delay fuse. 3,706,062, Cl. 337-159.000.

Jung, Werner: *See—*
Ernst, Alfons; and Jung, Werner, 3,705,518.

Juttner, Alwin; and Gruner, Hans, to Graubremse GmbH. Tire equipped vehicle wheel to be connected with a tire air filling device carried by the vehicle. 3,705,614, Cl. 152-417.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Iwaoka, Seijiro; and Mori, Hiroo, 3,705,643.

Kahl, Gerald J.; and Guidi, Guido N., 1/2 to Kahl Scientific Instrument Corporation and 1/2 to Societa Italiana Apparecchi de Precisione S.p.A. Precipitation sensor. 3,705,533, Cl. 73-171.000.

Kahl Scientific Instrument Corporation: *See—*
Kahl, Gerald J.; and Guidi, Guido N., 3,705,533.

Kaitz, Vincent A.: *See—*
Gilmour, Richard C.; Kaitz, Vincent A.; and Lemberger, Adolph W., 3,705,525.

Kalle Aktiengesellschaft: *See—*
Haas, Gunter, 3,705,844.
Moraw, Roland; and Arneth, Reinhold, 3,705,768.

Kamentsky, Louis A.: *See—*
Friedman, Mitchell; Kamentsky, Louis A.; and Klinger, Isaac, 3,705,771.

Kampjes, Gerrie Richard: *See—*
Vaneldik, Jan Frederik; Wilson, Ronald Ian; Kampjes, Gerrie Richard; and Lavender, William James, 3,705,478.

Kanas Maffei Aktiengesellschaft: *See—*
Collin, Heinrich, 3,705,778.

Kandler, Joachim; Dany, Franz-Josef; Komorniczyk, Klaus; and Munch, Peter, to Knapsack Aktiengesellschaft. Thermostable moulding material based on vinyl chloride or vinylidene chloride polymers. 3,705,865, Cl. 260-23.0xa.

Kanegafuchi Boseki Kabushiki Kaisha: *See—*
Hosokawa, Kenjiro; and Ichikawa, Michio, 3,705,823.

Kansai Paint Company, Limited: *See—*
Kasano, Kimiaki; and Kaya, Ichiro, 3,705,569.
Shibata, Minoru; Yusa, Makoto; Nakata, Hisao; and Harada, Michisuke, 3,705,866.

Kapoor, Ramesh: *See—*
Hyman, Seymour; Bernstein, Bruce S.; and Kapoor, Ramesh, 3,705,938.

Karl-Heinz, Eggert: *See—*
Heinz, Freiwald; and Karl-Heinz, Eggert, 3,705,568.

Karp, Joel A.: *See—*
Vadasz, Leslie L.; and Karp, Joel A., 3,706,079.

Kasano, Kimiaki; and Kaya, Ichiro, to Kansai Paint Company, Limited. Apparatus for painting the inner surface of pipes. 3,705,569, Cl. 118-105.000.

Kashiki, Asayuki, to Maruzon Oil Company Limited. Atomic absorption spectroscopic analytical method and apparatus. 3,705,770, Cl. 356-36.000.

Kashiwa, Norio; Tohoru, Tomoshige; Kobayashi, Toshio; and Honma, Shiro, to Mitsui Petrochemical Industries, Ltd. Process for polymerization or copolymerization of ethylene. 3,705,886, Cl. 260-85.300.

Kasugai, Tsuneo; Minagawa, Nobuhiko; and Kurabayashi, Hiroyuki, to Fuji Photo Film Co., Ltd. Photo-sensitive material having UV irradiated polystyrene support. 3,705,808, Cl. 96-87.00r.

Kato, Junichi: *See—*
Fukui, Hiroshi; Iwatsu, Gakuji; and Kato, Junichi, 3,705,718.

Kato, Masaaki; and Sato, Sigeta, to Asahi Chemical Industry Co., Ltd. Production of hydrogen ions and hydroxyl ions by decomposition of water. 3,705,846, Cl. 204-180.00p.

Kaufman, Charles W., to Olin Corporation. Dialkyltin salts of substituted pyridine-1-oxides as fungicides and bactericides. 3,705,943, Cl. 424-245.000.

Kawchitch, Claude Edward. Conveyor screw element. 3,705,644, Cl. 198-213.000.

Kaya, Ichiro: *See—*
Kasano, Kimiaki; and Kaya, Ichiro, 3,705,569.

Kayatz, Karl-Heinz, to Claudius, Peters Aktiengesellschaft. Material cooling apparatus. 3,705,460, Cl. 34-60.000.

Kaye, Saul, to Ventron Corporation. Corrosion inhibition with methylene bis-benzoic acid. 3,705,786, Cl. 21-2.700.

Kazantsev, Evgeny Andreevich: *See—*
Vishnitsky, Alexandr Lazarevich; Shapiro, Lev Mironovich; Kazantsev, Evgeny Andreevich; Shvartsman, Benyamin Markovich; Shilov, Georgy Petrovich; Nemilov, Evgeny Fedorovich; Baisupov, Izmail Abdulovich; Masterov, Vasily Fomich; and Rumyantsev, Alexandr Steanovich, 3,705,848.

Kearney, Joseph P.: *See—*
Retzer, Theodore C.; and Kearney, Joseph P., 3,706,000.

Kelem, Lester S.; and Reade, Stephen E., to United States of America, Army. Time oscillator calibrator circuit. 3,706,049, Cl. 331-44.000.

Keller, Joseph Richard; and Pritulsky, James, to AMP Domestic Inc. Terminal member for light transmitting means. 3,705,756, Cl. 350-96.00b.

Keller, Wolfgang, to Siemens Aktiengesellschaft. Method for floating zone melting. 3,705,789, Cl. 23-301.0sp.

Kelley, Joe: *See—*
Tollison, James W.; and Kelley, Joe, 3,705,607.

Kelly, Brian. Table construction. 3,705,556, Cl. 108-144.000.

Kennedy, John Frederick: *See—*
Barker, Sidney Alan; Kennedy, John Frederick; and Cray, Charles John, 3,705,890.

Kent, Cecil, to Creators Limited. Glazing windows or windscreen openings, particularly in vehicle bodies. 3,705,470, Cl. 52-208.000.

Kimberly-Clark Corporation: *See—*
Wolf, Ernest Robert, 3,705,476.

Kindig, Edwin Guilford, to Eastman Kodak Company. Film unit and apparatus for use therewith. 3,705,541, Cl. 95-13.000.

King, William L.; and Stein, Edward S. Matrix switch with slide type actuator and conductive spring common to ground contact and movable contact. 3,705,963, Cl. 200-16.00c.

King, William M. Sod cultivator. 3,705,628, Cl. 172-68.000.

Kinoshita, Tomoo: *See—*
Akatsu, Mitsuharu; Kinoshita, Tomoo; and Iwasaki, Tadahiko, 3,706,003.

Kirchgassner, Hedwig, to Deutsche Gold- und Silber-Scheideanstalt vormal Roessler. Silicic acid-containing dentifrice. 3,705,940, Cl. 424-49.000.

Kishino, Shigeo: *See—*
Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,705,929.

Klang, Daniel M., to Bucode Inc. Capstan motor control system. 3,706,020, Cl. 318-270.000.

Klass, Lawrence S.: *See—*
Brandel, Wynand W.; and Klass, Lawrence S., 3,705,511.

Klein, Peter O.; and Reid, Jerome L., to Polaroid Corporation. Photographic color diffusion-transfer unitary elements comprising an emulsion layer containing polyvinyl-hydrogen-phthalate therein. 3,705,798, Cl. 96-3.000.

Klein, Robert I.; and Hogg, Walter R., to Coulter Electronics, Inc. Electronic particle detector of the coulter type having conductivity change independence circuitry. 3,706,030, Cl. 324-71.0cp.

Klein, Samuel H. Filter system employing activated carbon porous material and diatomaceous earth. 3,705,651, Cl. 210-266.000.

Klinger, Isaac: *See—*
Friedman, Mitchell; Kamentsky, Louis A.; and Klinger, Isaac, 3,705,771.

Klopping, Hein L., to Du Pont de Nemours, E. I., and Company. Fungicidal compositions and methods utilizing metal complexes. 3,705,939, Cl. 424-245.

Knapsack Aktiengesellschaft: *See—*
Kandler, Joachim; Dany, Franz-Josef; Komorniczyk, Klaus; and Munch, Peter, 3,705,865.

Knight, Chesterton S.; and Baker, Randolph H., to Knight, Geo., & Co., Inc. Stitchdown counter molding, flanging and wrapping machine. 3,705,434, Cl. 112-142.00d.

Knight, Geo., & Co., Inc.: *See—*
Knight, Chesterton S.; and Baker, Randolph H., 3,705,434.

Knitter, Heinz; and Sorg, Paul, to Bunker-Ramo Corporation, The. Electric contact arrangement. 3,706,065, Cl. 339-17.0lc.

Knotik, Karl; and Gutlbauer, Franz, to Osterreichische Studiengesellschaft fur Atomenergie Ges. m.b.H. Tongue for wind instruments and a method for producing same. 3,705,820, Cl. 117-93.310.

Kobayashi, Toshio: *See—*
Kashiwa, Norio; Tohoru, Tomoshige; Kobayashi, Toshio; and Honma, Shiro, 3,705,886.

Kobayashi, Yoneji: *See—*
Honda, Toshio; Kubota, Eishi; Fukuura, Yukio; and Kobayashi, Yoneji, 3,705,868.

Kochkin, Dmitry Alexandrovich: *See—*
Dzevitsky, Boris Eduardovich; Spitsyn, Boris Vladimirovich; Kochkin, Dmitry Alexandrovich; and Deryagin, Boris Vladimirovich, 3,705,937.

Koenig, Elmer A.: *See—*
Stumpf, Marvin D.; and Koenig, Elmer A., 3,705,582.

Kolko, Gary A.; and Brown, Clifford, to Menorah Medical Center. Urinalysis work rack. 3,705,788, Cl. 23-259.000.

Kollar, John P., to Kollar, Thomas J. Machine tool bit. 3,705,447, Cl. 29-95.000.

Kollar, Thomas J.: *See—*
Kollar, John P., 3,705,447.

Komai, Hirotaka: *See—*
Matsuo, Toshiaki; Chono, Koji; Go, Tadahiro; and Komai, Hirotaka, 3,705,880.

Komorniczyk, Klaus: *See—*
Kandler, Joachim; Dany, Franz-Josef; Komorniczyk, Klaus; and Munch, Peter, 3,705,865.

Konen, Patricia F., to Rohm and Haas Company. Inflatable flexible container and fabric for making it. 3,705,645, Cl. 206-46.00r.

Konz, Wilhelm: *See—*
Wieland, Theodor; Konz, Wilhelm; Faesel, Jurgen; and Lewalter, Jurgen, 3,705,887.

Korony, Gheorghe: *See—*
Grigorovici, Radu G.; Devenyi, Andrei Gavrila; Florea, Valer; Korony, Gheorghe; Belu, Aretia; and Costachescu, Carol, 3,705,993.

Koschatzky, Karl, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Bending tool for bending deformable workpieces, such as metal sheets and the like. 3,705,512, Cl. 72-57.000.

Kostylev, Alexandr Dmitrievich: *See—*
Sudnishnikov, Boris Vasilievich; Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tupitsyn, Konstantin Konstantinovich; and Plavskikh, Vladimir Dmitrievich, 3,705,633.

Kosugi, Tsuneo, to Victor Company of Japan, Ltd. Rotation servo system with frequency and phase error correction. 3,705,840, Cl. 178-6.60p.

Kotov, Anatoly Mikhailovich: *See—*
Mikhelis, Konstantin Alexandrovich; Fomina, Alexandr Sergeevna; Murumets, Kirill Vladimirovich; Ulanen, Yalmar Semenovich; Kotov, Anatoly Mikhailovich; Volkov, Timofei Mikhailovich; Itsikson, Boris Semenovich; Suurmaa, Raivo Alexandrovich; Viks, Paavo Yaanvich; and Berestovsky, Georgy Grigorievich, 3,705,793.

Kowalchuk, Roman: *See—*
Bobeck, Andrew Henry; Kowalchuk, Roman; and Reekstin, John Peter, Jr., 3,706,081.

Koyama, Mikihiro; and Inagaki, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Steering handle attaching apparatus in a two-wheeled vehicle. 3,705,733, Cl. 280-278.000.

Kozawa, Tetuo: *See—*
Sakawa, Katuaki; and Kozawa, Tetuo, 3,705,561.

Krammer, Vance M.; and Carlton, Lawrence W. Apparatus for making flexible tubing with annular corrugations. 3,705,780, Cl. 18-14.0tc.

Kranich, Werner. Writing instrument. 3,705,774, Cl. 401-33.000.

Krause, Ronald O.; and Bayne, Peter D., to Nutrico, Inc. Continuous control for introducing material into a flowing liquid. 3,705,597, Cl. 137-101.210.

Krausser, Friedrich Johann, to Emerson Electric Co. Automatic tuning circuit. 3,706,041, Cl. 325-422.000.

Kremer, Frederic B. Body current activated circuit breaker. 3,706,008, Cl. 317-18.00a.

Kroll, Harry: *See—*
Sykes, Donald J.; Kroll, Harry; and Finch, Theron R., 3,705,806.

Kubel, Wilfried: *See—*
Bauerle, Oskar; Kubel, Wilfried; Munster, Ernst; Schweikert, Karl; and Strobl, Georg, 3,705,997.

Kubota, Eishi: *See—*
Honda, Toshio; Kubota, Eishi; Fukuura, Yukio; and Kobayashi, Yoneji, 3,705,868.

Kuczkowki, Frank A.: *See—*
Laakaniemi, Richard N.; Kuczkowki, Frank A.; Atkinson, Louis D.; Kuhar, Paul W.; Lechner, Thomas J., Jr.; and Weber, Urban A., 3,705,595.

Kuehne, Gerhard B.: *See—*
Miran, George V.; and Kuehne, Gerhard B., 3,706,002.

Kuesters, Eduard. Rolling and squeezing apparatus. 3,705,449, Cl. 29-113.0ad.

Kuhar, Paul W.: *See—*
Laakaniemi, Richard N.; Kuczkowki, Frank A.; Atkinson, Louis D.; Kuhar, Paul W.; Lechner, Thomas J., Jr.; and Weber, Urban A., 3,705,595.

Kunststoffwerk Gebruder Anger G.m.b.H. & Co.: *See—*
Jirka, Karl; Gutlhuber, Johann; and Straubing, Irlbach B., 3,705,950.

Kunze, Bernhard, to Wilhelm Gesenscheidt Kommanditgesellschaft. Pressure roller device. 3,705,514, Cl. 72-120.000.

Kurabayashi, Hiroyuki: *See—*
Kasugai, Tsuneo; Minagawa, Nobuhiko; and Kurabayashi, Hiroyuki, 3,705,808.

Kusunose, Tethiro: *See—*
Ishikawa, Tatsuo; Hiruta, Shiro; Wakabayashi, Teruomi; Inamoto, Yoshihiko; Kusunose, Tethiro; Tsumaki, Tatsuichi; and Ota, Masami, 3,705,877.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Fujimoto, Yasuo; Teranishi, Masayuki; and Tezuka, Toshihiko, 3,705,873.

Laakaniemi, Richard N.; Kuczkowki, Frank A.; Atkinson, Louis D.; Kuhar, Paul W.; Lechner, Thomas J., Jr.; and Weber, Urban A., to

Johnson Service Company. Fluidic amplifier or modulator with high impedance signal source means. 3,705,595, Cl. 137-81.500.

Ladd, Fred; and Song, Jung Hoon, to Color Systems, Inc. Method for converting black-and-white films to color films. 3,705,762, Cl. 352-38.000.

Laerman, Lothar; and Schenk, Robert J., to Singer Company, The. Packaging structure having cooling means for a multiplicity of hermetic modules for integrated circuit chips. 3,706,010, Cl. 317-100.000.

Lajrent, Francois: *See—*
Cook, Gordon Henry; and Lajrent, Francois, 3,705,759.

Landbouerktuigen-en Machinefabriek H. Vissers N.V.: *See—*
Vissers, Herbert, 3,705,630.

Landbouwerktwigen-en-Machine-fabriek H. Vissers N.V.: *See—*
Vissers, Herbert, 3,705,629.

Landow, Charles D.; and Mutalipassi, Ettor, to United Overhead Door Corporation. Lock latch assembly for counterbalanced cargo carrying vehicle doors. 3,705,505, Cl. 70-99.000.

Lane, Daniel J.: *See—*
Rukavina, Louis, Jr.; Brower, Robert L.; and Lane, Daniel J., 3,705,437.

Lane, William S., to Eastman Kodak Company. Novel photographic processing compositions and improved processing using such compositions for preparing silver sound tracks. 3,705,800, Cl. 96-4.000.

Langendorfer Plastics Corporation: *See—*
Langendorfer, Walter J.; and Coffin, David W., Sr., 3,705,760.

Langendorfer, Walter J.; and Coffin, David W., Sr., to Langendorfer Plastics Corporation. Face goggles. 3,705,760, Cl. 351-44.000.

Lanier Electronic Laboratory, Inc.: *See—*
Nye, William M.; and Jones, Stanley W., 3,705,961.

Lappin, Douglas E. Sectional articulated agricultural apparatus. 3,705,560, Cl. 111-85.000.

Latussek, Hanns Peter: *See—*
Ott, Hanns; and Latussek, Hanns Peter, 3,705,752.

Laurie, James Harold; and Cole, Raymond Alfred. Filtration apparatus. 3,705,547, Cl. 100-121.000.

Lavender, William James: *See—*
Vaneldik, Jan Frederik; Wilson, Ronald Ian; Kampjes, Gerrie Richard; and Lavender, William James, 3,705,478.

Lazarus, Stanley David, to Allied Chemical Corporation. Dyeable polyesters containing branched alkyl benzene sulfonate. 3,705,878, Cl. 260-75.00s.

Le Sergent, Christian: *See—*
Collier, Franck; Dauchy, Jean-Daniel; Le Sergent, Christian; and Michon, Maurice, 3,706,051.

Lear Siegler, Inc.: *See—*
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Leatherman, Alfred F.: *See—*
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Lechner, Thomas J., Jr.: *See—*
Laakaniemi, Richard N.; Kuczkowki, Frank A.; Atkinson, Louis D.; Kuhar, Paul W.; Lechner, Thomas J., Jr.; and Weber, Urban A., 3,705,595.

Leduc, Jean: *See—*
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Lee, Aaron, to Cheman Corporation of America. Liquid spray apparatus. 3,705,689, Cl. 239-337.000.

Lee, Richard J. Full length cartridge case re-sizing. 3,705,515, Cl. 72-367.000.

Lee, Thomas Brian: *See—*
Fitzmaurice, Colin; and Lee, Thomas Brian, 3,705,945.

Lee, Tzuo-Chang, to Honeywell Inc. Holographic optical memory having pivot lens apparatus. 3,706,080, Cl. 340-174.0yc.

Leiba, Eugene: *See—*
Assouline, George; Conjeaud, Pierre; Girault, Pierre; and Leiba, Eugene, 3,705,955.

Leir, Charles M., to Minnesota Mining and Manufacturing Company. Process for preparing 2-formyl-2-lower alkyl 1,3-dithiolanes and 1,3-dithianes. 3,705,908, Cl. 260-327.00m.

Lemberger, Adolph W.: *See—*
Gilmour, Richard C.; Kaitz, Vincent A.; and Lemberger, Adolph W., 3,705,525.

Lemelson, Jerome H. Automatic communication system. 3,705,953, Cl. 178-6.60a.

Lendvay, Andrew T. Coffee extraction. 3,705,810, Cl. 99-71.000.

Lerman, Russell E., to United States of America, Army. Pyrotechnic coiled delay cord assembly for a hand grenade fuze. 3,705,552, Cl. 102-64.000.

Lermann, Peter, to Agfa-Gevaert Aktiengesellschaft. Camera with exposure control using a single magnet. 3,705,536, Cl. 95-10.0ct.

Levi, Alberto: *See—*
Camporese, Marsilio; and Levi, Alberto, 3,705,443.

Levy, Stephen David; and Wayne, Richard Steven, to American Cyanamid Company. Process for the direct synthesis of styryl-pyridinium chlorides. 3,705,895, Cl. 260-240.00d.

Lewalter, Jurgen: *See—*
Wieland, Theodor; Konz, Wilhelm; Faesel, Jurgen; and Lewalter, Jurgen, 3,705,887.

Lewis, Charles Edward. Non-ionic, nickel N-alkylamine arylazoaryl compounds. 3,705,888, Cl. 260-151.000.

Lewis, Ernest E., to Gainesville Machine Company, Inc. Fowl vent removal apparatus and method. 3,705,440, Cl. 17-11.000.

Libby, Hugo L.: *See—*
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Licentia Patent-Verwaltungs, G.m.b.H.: *See—*
Gunzel, Gerhard, 3,706,047.
Hilberg, Wolfgang, 3,706,078.
Schimmer, Rigobert; Gesing, Horst; and Cordes, Karl-Heinz, 3,706,015.

Lilly, Eli, and Company: *See—*
Cooper, Robin D. G., 3,705,892.
Dyke, Richard W.; and Sweeney, Martin J., 3,705,946.
Gerzon, Koert; and Holmes, Richard E., 3,705,894.
Murphy, Charles F., 3,705,897.
Ryan, Charles W., 3,705,900.

Lilly Industries, Ltd.: *See—*
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Lipscomb, Willis L. Vehicle bumper assembly. 3,705,742, Cl. 293-89.000.

Little, Vincent C.: *See—*
Berlin, Aaron S.; and Little, Vincent C., 3,705,551.

LKB-Produkter AB: *See—*
Everaerts, Frans, 3,705,845.

Loika, Alexander, Jr., to General Electric Company. Induction watthour meter potential coil mounting. 3,706,061, Cl. 336-197.000.

Long, James A., to United States of America, Army. Solid rocket thrust termination device. 3,705,550, Cl. 102-49.500.

Longfellow, Jack M.: *See—*
Boutwell, Ernest D.; and Longfellow, Jack M., 3,706,031.

Longo, John F.; and Duff, Joseph H., to Ecodyne Corporation. Condensate analyzer. 3,705,477, Cl. 55-18.000.

Longview Fibre Company: *See—*
Budington, Richard V., 3,705,557.

Lovett, John R. Replaceable roller surface for conveyor and application techniques therefor. 3,705,455, Cl. 29-234.000.

Lown, Milton, to Northeast Shoe Company. Construction for shoe, slipper or the like. 3,705,463, Cl. 36-25.000.

Lownes, Irvin S., Jr.: *See—*
McPherson, Frank H.; Lownes, Irvin S., Jr.; and Richardson, Thomas L., 3,706,074.

LTV Electrosystems, Inc.: *See—*
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Luca, Vasile: *See—*
Gurgui, Constantin; Luca, Vasile; Eckardt, Andrei; and Ciulacu, Paraschiv, 3,705,830.

Luce, David W.: *See—*
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Luckey, George William; and Sherwood, Charles Frederick, to Eastman Kodak Company. Preparation of rare-earth-activated oxysulfide phosphors. 3,705,858, Cl. 252-301.40s.

Lulay, John R.; Marusarz, Bruno J.; and Mateja, Edward J., to American Gage & Machine Company. Constant input energy absorbing apparatus. 3,705,721, Cl. 272-73.000.

Lumb, Melvyn; Macey, Peter Edward; Wright, Richard Donald; and Petchell, Roy Kenneth, to Boots Pure Drug Company Limited. Fermentation processes and apparatus. 3,705,841, Cl. 195-80.00r.

Lummus Company, The: *See—*
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Lundberg, Charles A., Jr.; and Engelhart, John E., to Esso Research and Engineering Company. N-(2-[4,5,6,7-Tetrahydrobenzothienyl])-propionamides. 3,705,910, Cl. 260-332.20r.

Lundgren, Carl William, Jr., to Bell Telephone Laboratories, Incorporated. Communication satellite system. 3,706,037, Cl. 325-4.000.

Lyall Electric, Inc.: *See—*
Shroyer, Larry L., 3,706,066.

Lyon, David M.: *See—*
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Macey, Peter Edward: *See—*
Lumb, Melvyn; Macey, Peter Edward; Wright, Richard Donald; and Petchell, Roy Kenneth, 3,705,841.

Mackie, William L. Erodable material. 3,705,659, Cl. 215-1.00c.

Magerlein, Barney J.: *See—*
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Mailfert, Alain Jacques: *See—*
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Mandon, Jean-Pierre: *See—*
Hennart, Claude; Martin, George; Mandon, Jean-Pierre; and Rabussier, Bernard Aranton, 3,705,941.

Manning, Bernard; and Nelson, Sigurd E., to Nuclear Associates, Inc. Fluid irradiator and process for its manufacture. 3,705,985, Cl. 250-106.

Mansei Kogyo Kabushiki Kaisha: *See—*
Goto, Kenjiro, 3,705,785.

Mansfield, Matthewand; and Cooperman, Morton. Teaching machine. 3,705,462, Cl. 35-9.00d.

Marathon Oil Company: *See—*
Argabright, Perry A.; Hummel, Jack L.; and Presley, C. T., 3,705,627.

Marcum, Alfred L., Jr.; Burns, Marvin; and Rodzen, Richard A., to United States of America, Air Force. Pressure suit joint system. 3,705,426, Cl. 2-2.10a.

Mari, John P.: *See—*

Hintze, Melvin M.; Mari, John P.; McDaniel, Roy F.; and Evel, Eddie A., 3,706,044.
Marinelli, Joseph A., to City Welding & Manufacturing Co., Inc. Trailer construction. 3,705,732, Cl. 280-106.00t.
Marschner, Frank William, to Colgate-Palmolive Company. Reversible-emulsion aerosol system. 3,705,855, Cl. 252-90.000.
Martin, George: *See—*
Hennart, Claude; Martin, George; Mandon, Jean-Pierre; and Rabussier, Bernard Aranton, 3,705,941.
Martin, Henry; and Drabek, Josef, to Ciba-Geigy AG. Vinyl phosphates, process for their preparation and pesticidal preparations containing them. 3,705,904, Cl. 260-326.50a.
Martin, Thomas E.: *See—*
Cohen, Kenneth W.; and Martin, Thomas E., 3,705,535.
Martin-Marietta Corporation: *See—*
Hintze, Melvin M.; Mari, John P.; McDaniel, Roy F.; and Evel, Eddie A., 3,706,044.
Marusarz, Bruno J.: *See—*
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Maruzon Oil Company Limited: *See—*
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Marwell, Edward M.; and Finger, Eugene P., to Curtis Instruments, Inc. Elapsed time compiling system. 3,706,036, Cl. 324-181.000.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
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Masciantonio, Philip X.: *See—*
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Maskal, Haim, to Honeywell Inc. Apparatus for controlling a beam of coherent electro-magnetic waves. 3,705,758, Cl. 350-160.000.
Massachusetts Institute of Technology: *See—*
Cox, Duncan B., Jr.; and Fertig, Kenneth, 3,706,092.
Massie, Stephen N., to Universal Oil Products Company. Preparation of alcohols. 3,705,912, Cl. 260-397.200.
Masterov, Vasily Fomich: *See—*
Vishnitsky, Alexandr Lazarevich; Shapiro, Lev Mironovich; Kazantsev, Evgeny Andreevich; Shvartsman, Benyamin Markovich; Shilov, Georgy Petrovich; Nemilov, Evgeny Fedorovich; Baisupov, Izmail Abdulovich; Masterov, Vasily Fomich; and Rumyantsev, Alexandr Steanovich, 3,705,848.
Mateja, Edward J.: *See—*
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Matsuo, Toshiaki; Chono, Koji; Go, Tadahiro; and Komai, Hirotaka, to Japanese Geon Company Ltd., The. Process for the preparation of alkylene oxide copolymers. 3,705,880, Cl. 260-77.50r.
Mattel Inc.: *See—*
Nicholls, Reginald W., 3,705,720.
Matts, George A.; and Quarmby, Robert C., to USM Corporation. Manufacture of springs. 3,705,609, Cl. 140-103.000.
May, Carl Jerome, Jr., to Bell Telephone Laboratories, Incorporated. Digital threshold detector. 3,706,091, Cl. 340-347.0dd.
Mc Claflin, Gifford G.: *See—*
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Mc Gann, Rodney: *See—*
Wolf, Robert L.; and Mc Gann, Rodney, 3,705,496.
Mc Pherson, Wilson W. Apparatus for cooling air. 3,705,479, Cl. 55-223.000.
McCullough, David R.: *See—*
Clavin, Edward A.; McCullough, Donald H.; and McCullough, David R., 3,705,506.
McCullough, Donald H.: *See—*
Clavin, Edward A.; McCullough, Donald H.; and McCullough, David R., 3,705,506.
McDaniel, Roy F.: *See—*
Hintze, Melvin M.; Mari, John P.; McDaniel, Roy F.; and Evel, Eddie A., 3,706,044.
McDougal, John A.; and Schwartzwalder, Karl, to General Motors Corporation. Armor. 3,705,558, Cl. 109/084.000.
McKnight, James T. Soil bed preparation, soil stabilizing, soil conditioning, and soil improving process. 3,705,467, Cl. 47-9.000.
McLeod, Starr R. Ice resurfacer. 3,705,746, Cl. 299-25.000.
McLeon, Daniel M.: *See—*
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McNeill, William: *See—*
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McPherson, Frank H.; Lownes, Irvin S., Jr.; and Richardson, Thomas L., to Decision Data Corporation. Data recorder. 3,706,074, Cl. 340-172.500.
Meat Technology, Inc.: *See—*
Vogel, Paul W.; and Silliker, John H., 3,705,813.
Medline Industries, Inc.: *See—*
Fript, Leonard T., 3,705,584.
Rentsch, Hans J., 3,705,583.
Mehlschau, James J.: *See—*
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Merten, Rudolf; and Zecher, Wilfried, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of polyhydantoin plastics containing imide groups. 3,705,874, Cl. 260-47.0cp.
Messer Griesheim GmbH: *See—*
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Metallgesellschaft Aktiengesellschaft: *See—*
Heitmann, Gunter, 3,705,795.
Meyer, Leo F.: *See—*
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Michon, Maurice: *See—*
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Micro-Technology: *See—*
Weatherman, John F.; Walker, Gary J.; and Conley, Larry R., 3,705,970.
Mihajlov, Vsevolod S.; and Carreira, Leonard M., to Xerox Corporation. Fixing process for photoelectrophoratic imaging. 3,705,797, Cl. 96-1.00r.
Mikhelis, Konstantin Alexandrovich; Fomina, Alexandr Sergeevna; Murumets, Kirill Vladimirovich; Ulanen, Yalmar Semenovich; Kotov, Anatoly Mikhailovich; Voikov, Timofei Mikhailovich; Itsikson, Boris Semenovich; Suurmaa, Raivo Alexandrovich; Viks, Paavo Yaanvich; and Berestovsky, Georgy Grigorievich, to Slantsekhimichesky Kombinat "Kiviyli" U.S.S.R. Chemical soil improver. 3,705,793, Cl. 71-24.000.
Millar, Thomas Ritchie, to Trist Mouldings & Seals Limited. Rotary shaft seals. 3,705,728, Cl. 277-81.000.
Miller, George M.; and Underwood, Max E., to Badger Company, Inc., The. Sublimation apparatus and method. 3,705,617, Cl. 165-1.000.
Miller, Richard C., Sr. Head light control system for vehicles. 3,706,006, Cl. 315-83.000.
Minagawa, Nobuhiko: *See—*
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Mineral Products Corporation: *See—*
Olton, Robert N.; and Berney, Bernard C., 3,705,838.
Minks, Floyd M. Distributor with rotor advance input control. 3,705,501, Cl. 64-25.000.
Minnesota Mining & Manufacturing Company: *See—*
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Minnesota Mining and Manufacturing Company: *See—*
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Miran, George V.; and Kuehne, Gerhard B., to Varian Associates. Electron gun. 3,706,002, Cl. 315-5.390.
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Mitsui Petrochemical Industries, Ltd.: *See—*
Kashiwa, Norio; Tohoru, Tomoshige; Kobayashi, Toshio; and Honma, Shiro, 3,705,886.
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Fau, Paul; and Petrucco, Richard J., 3,705,853.
Glenn, Edwin E., Jr.; Slover, Vasel R.; and Sirughar, Malcolm K., 3,705,626.
Hawk, Daniel E., 3,705,603.
Mohammar, John Markus. Collapsible garment hanger. 3,705,673, Cl. 223-94.000.
Mollerfors, Lars William Anshelm: *See—*
Nordin, Lars-Erik Reinhold; and Mollerfors, Lars William Anshelm, 3,705,602.
Monsanto Company: *See—*
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Moraw, Roland; and Arneth, Reinhold, to Kalle Aktiengesellschaft. Copying apparatus. 3,705,768, Cl. 355-8.000.
Mori, Hiroo: *See—*
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Mori, Takashi; and Yoshikawa, Tatsuya, to Fujitsu Limited. Multiprocessor type information processing system with control table usage indicator. 3,706,077, Cl. 340-172.500.
Morini, Jean-Louis; Rigal, Pierre; and Leduc, Jean. Massage device. 3,705,579, Cl. 128-57.000.
Morisaki, Nobukazu, to Daida Metal Company Ltd. Bearing material. 3,705,450, Cl. 29-182.300.
Morman, James Forrester, to Imperial Chemical Industries Limited. Tobacco substitute smoking mixture. 3,705,589, Cl. 131-17.000.
Morris, John M.; and Schrader, Preston H., to Rex Chainbelt Inc. Electromagnetic vibrator employing rectification of induced currents. 3,706,018, Cl. 318-125.000.
Morris, Philip, Incorporated: *See—*
Tamol, Ronald A.; and Meyer, Leo F., 3,705,588.
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Eremenko, Vladimir Grigorievich, 3,706,019.
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Reinert, John R., 3,706,043.
Motta, Alfredo. Method and device for uniting wood strips together. 3,705,452, Cl. 29-155.00r.
Mould, Peter R.: *See—*
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Mount, Gordon L.; and Endress, James W., to Carrier Corporation. Oil dilution control. 3,705,499, Cl. 62-84.000.

Mowrey, Albert C.; Huiskes, John H.; and Brand, Abraham, to General Instrument Corporation. Magnetic holddown for magnetic disc system. 3,706,085, Cl. 340-174.10c.

Moyer, Ronald G.; and Emory, Thomas M., Jr., to Digi-Log Systems, Inc. Transistor ignition system. 3,705,988, Cl. 307-10.00r.

Mueller, Frederick N., to Tetradyne Corporation, mesne. Solids feeder system. 3,705,710, Cl. 259-151.000.

Muller, Adolf M.; and Grosselfinger, Josef. Stripper for the drawing frames of spinning machines. 3,705,441, Cl. 19-263.000.

Munch, Peter: *See—*
Kandler, Joachim; Dany, Franz-Josef; Komorniczyk, Klaus; and Munch, Peter, 3,705,865.

Munster, Ernst: *See—*
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Murphy, Charles F., to Lilly, Eli, and Company. Method for converting δ^2 caphalosparin to δ^3 cephalosparin. 3,705,897, Cl. 260-233.00c.

Murumets, Kirill Vladimirovich: *See—*
Mikhelis, Konstantin Alexandrovich; Fomina, Alexandr Sergeevna; Murumets, Kirill Vladimirovich; Ulanen, Yalmar Semenovich; Kotov, Anatoly Mikhailovich; Volkov, Timofei Mikhailovich; Itsikson, Boris Semenovich; Suurmaa, Raivo Alexandrovich; Viks, Paavo Yaanvich; and Berestovsky, Georgy Grigorievich, 3,705,793.

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Muzyka, Donald R.; and Schlosser, Donald K., to Carpenter Technology Corporation. Nickel-iron base alloys and heat treatment therefor. 3,705,827, Cl. 148-142.000.

Myers, John H.: *See—*
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Nagasaki, Senkichi: *See—*
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Nail, Walter P. Inflatable load supporting structures. 3,705,429, Cl. 5-349.000.

Naito, Takeo: *See—*
Oshima, Yasuo; Nakazawa, Nobuhiko; Nagasaki, Senkichi; Naito, Takeo; Osada, Yasuaki; Okusa, Naoya; Inuaki, Akira; and Tanaka, Kazuyuki, 3,705,989.

Nakamura, Yashuharo: *See—*
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Nakata, Hisao: *See—*
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Nakazawa, Giyoshiyuki; Nakamura, Yashuharo; Takei, Haruo; Sato, Akira; and Ikeda, Tadashi, to Fuji Photo Film Co. Ltd. Silver halide supersensitized photographic emulsion. 3,705,809, Cl. 96-124.000.

Nakazawa, Nobuhiko: *See—*
Oshima, Yasuo; Nakazawa, Nobuhiko; Nagasaki, Senkichi; Naito, Takeo; Osada, Yasuaki; Okusa, Naoya; Inuaki, Akira; and Tanaka, Kazuyuki, 3,705,989.

Nall, Thomas J., to United States of America, Army, mesne. Thermionic electron emitter containing thorium carbide, thorium oxide and zirconium carbide. 3,706,001, Cl. 313-346.0dc.

Narayanan, Venkatachala Lakshmi; and Dolfini, Joseph Edward, to Squibb, E. R., & Sons, Inc. Adamantanopyrrolidines. 3,705,906, Cl. 260-326.115.

Narumi, Tadataka: *See—*
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National Research and Chemical Company: *See—*
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Nelson, Evan S.; and Nelson, Charles J., 3,705,666.

Nelson, Evan S.; and Nelson, Charles J., to Nelson Company, The. Apparatus for perforating and opening a can of liquid and for sealing the opened can against leakage while coupling a dispenser to the opened can. 3,705,666, Cl. 222-82.000.

Nelson, Roger John, to Deere & Company. Pump assembly for power steering system. 3,705,493, Cl. 60-52.00s.

Nelson, Sigurd E.: *See—*
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Nemilov, Evgeny Fedorovich: *See—*
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Newman, James W.; and Zajac, Ronald E., to Windings, Inc. Payout stand for universal type winds with radial opening for feedout. 3,705,698, Cl. 242-129.510.

Nicholls, Reginald W., to Mattel Inc. Toy aircraft raundabout with flexible control tether. 3,705,720, Cl. 272-31.00a.

Nicolas, Yves, to Schlumberger Technology Corporation. Method of processing production well logging data. 3,705,979, Cl. 235-151.340.

Nicolay, Klaus: *See—*
Wagner, Karl; Nicolay, Klaus; Schuchardt, Gerhard; and Putscher, Johann, 3,705,539.

Niggelom, Curt. Stand with carrying device. 3,705,703, Cl. 248-168.000.

Nihon Spindle Seizo Kabushiki Kaisha: *See—*
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Nilsson, Gosta, to Springfield Wire Inc. Hair setting apparatus. 3,705,974, Cl. 219-222.000.

Nippon Electric Company, Limited: *See—*
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Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Oil Company, Ltd.: *See—*
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Nippon Soda Company Limited: *See—*
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Nippondenso Kabushiki Kaisha: *See—*
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Nishizawa, Mitsugu: *See—*
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Nittel, Fritz; Sobel, Johannes; and Himmelmann, Wolfgang, to Agfa-Gevaert Aktiengesellschaft. Photographic layers containing compounds which absorb ultraviolet light. 3,705,805, Cl. 96-84.00r.

Nomura, Hirotsugu: *See—*
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Nordin, Lars-Erik Reinhold; and Mollerfors, Lars William Anshelm, to Stenberg-Flygt AB. Spring biased check valve for pipe branches. 3,705,602, Cl. 137-512.000.

Nordman, Adolph J.: *See—*
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North American Manufacturing Company, The: *See—*
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Lown, Milton, 3,705,463.

Northrop Corporation: *See—*
Reis, James John, 3,705,516.

Norton Company: *See—*
Alliegro, Richard A., 3,705,714.

Nuclear Associates, Inc.: *See—*
Manning, Bernard; and Nelson, Sigurd E., 3,705,985.

Nutrico, Inc.: *See—*
Krause, Ronald O.; and Bayne, Peter D., 3,705,597.

Nye, William M.; and Jones, Stanley W., to Lanier Electronic Laboratory, Inc. Recorder-transcriber switching apparatus. 3,705,961, Cl. 179-102.1dr.

Ochiai, Takeshi, to Toyota Jidosha Kabushiki Kaisha. Control system for preventing the skidding of vehicles. 3,705,748, Cl. 303-21.0be.

Ogawa, Fremont T., to General Motors Corporation. Speed change mechanism. 3,705,522, Cl. 74-803.000.

Oguchi, Yutaka; and Nomura, Hirotsugu, to Nippon Oil Company, Ltd. Catalyst for the hydrogenation of distillation residuum-containing petroleum hydrocarbons. 3,705,861, Cl. 252-448.000.

Okorokov, Ivan Fedorovich; Bogdanov, Gorgy Porfirievich; Sorokin, Konstantin Alexandrovich; Onischenko, Anatoly Fedorovich; Ziborov, Pavel Efimovich; and Perstnev, Samuil Nisonovich, to Vkrainsky Nauchno Issledovatelsky Institut Selskoklrozyaistvennojo Masvnostroerik Rospekt Gagarina. Root crop planter. 3,705,559, Cl. 111-3.000.

Okumura, Akihide: *See—*
Yamanaka, Ichiro; and Okumura, Akihide, 3,705,517.

Okusa, Naoya: *See—*
Oshima, Yasuo; Nakazawa, Nobuhiko; Nagasaki, Senkichi; Naito, Takeo; Osada, Yasuaki; Okusa, Naoya; Inuaki, Akira; and Tanaka, Kazuyuki, 3,705,989.

Olin Corporation: *See—*
Clarke, Gail H., Jr.; and Barnowski, Guilford Henry G., Jr., 3,705,857.
Kaufman, Charles W., 3,705,943.

Olson, Neil W. Pipe centering jig. 3,705,453, Cl. 29-200.00p.

Olton, Robert N.; and Berney, Bernard C., to Mineral Products Corporation. Water-proofing barrier. 3,705,838, Cl. 161-206.000.

Onischenko, Anatoly Fedorovich: *See—*
Okorokov, Ivan Fedorovich; Bogdanov, Gorgy Porfirievich; Sorokin, Konstantin Alexandrovich; Onischenko, Anatoly Fedorovich; Ziborov, Pavel Efimovich; and Perstnev, Samuil Nisonovich, 3,705,559.

Ontario Development Corporation: *See—*
Ratowsky, Simon, 3,705,544.

Opatril, Vaclav: *See—*
Skopalik, Josef; Svoboda, Vladimir; and Opatril, Vaclav, 3,705,503.

Osada, Yasuaki: *See—*
Oshima, Yasuo; Nakazawa, Nobuhiko; Nagasaki, Senkichi; Naito, Takeo; Osada, Yasuaki; Okusa, Naoya; Inuaki, Akira; and Tanaka, Kazuyuki, 3,705,989.

Oshima, Yasuo; Nakazawa, Nobuhiko; Nagasaki, Senkichi; Naito, Takeo; Osada, Yasuaki; Okusa, Naoya; Inuaki, Akira; and Tanaka, Kazuyuki, to Daiichi Seiyaku Company Limited. Fish disease treatment with naphthyridine derivatives. 3,705,989, Cl. 424-256.000.

Osmose Wood Preserving Co. of America, Inc.: *See—*
Gunning, Paul E., 3,705,854.

Osterreichische Studiengesellschaft fur Atomenergie Ges. m.b.H.: *See—*
Knotik, Karl; and Gutlbauer, Franz, 3,705,820.
Ota, Masami: *See—*
Ishikawa, Tatsuo; Hiruta, Shiro; Wakabayashi, Teruomi; Inamoto, Yoshihiko; Kusunose, Tethiro; Tsumaki, Tatsuichi; and Ota, Masami, 3,705,877.
Otala, Matti N. T. Method for determining the gram size distribution of ferromagnetic material. 3,706,028, Cl. 324-34.00r.
Ott, Hanns; and Latussek, Hanns Peter, to Siemens Aktiengesellschaft. Thrust bearing for midget motors. 3,705,752, Cl. 308-159.000.
Overly, Inc.: *See—*
Overly, William F.; and Pagel, Kenneth J., 3,705,676.
Overly, William F.; and Pagel, Kenneth J., to Overly, Inc. Air foil conveyor. 3,705,676, Cl. 226-97.000.
Overmyer, Robert C.; and Nordman, Adolph J., to Hawley Manufacturing Corporation. Releasable securement means for sealing web. 3,705,545, Cl. 98-115.0vm.
Owens Illinois, Inc.: *See—*
Elser, William F., 3,705,563.
Owens-Illinois, Inc.: *See—*
Peters, Homer D. F., 3,705,792.
Oxenrider, Bryce C.: *See—*
Woolf, Cyril; Oxenrider, Bryce C.; and Beyleveld, Wilhelmus M., 3,705,917.
Padgett, George L., to General Electric Company. Liquid cooled seal lube coupling. 3,705,502, Cl. 64-32.00r.
Page, Billy A. Crymotherapy apparatus for limbs. 3,705,587, Cl. 128-402.000.
Pagel, Kenneth J.: *See—*
Overly, William F.; and Pagel, Kenneth J., 3,705,676.
Paglia, Richard, to Polaroid Corporation. Apparatus for interfacing photographic camera and film cartridge. 3,705,537, Cl. 95-11.00r.
Palazzetti, Mario; and Cavaliarin, Bruno, to Fiat Societa per Azioni. Electronic timing system for internal combustion engine. 3,705,573, Cl. 123-146.50a.
Paris, Gerard Yvon: *See—*
Garmaise, David Lyon; Paris, Gerard Yvon; and Plotnikoff, Nicholas Peter, 3,705,902.
Park-Ohio Industries, Inc.: *See—*
Balzer, Norbert R.; and Arnosky, Joseph E., 3,705,973.
Sheetz, Richard S., 3,705,715.
Parkes, Ralph C. Dryer damper and control mechanism. 3,705,461, Cl. 34-191.000.
Pasley, Robert H., Sr.: *See—*
Francis, James G.; and Pasley, Robert H., Sr., 3,705,836.
Francis, James G.; and Pasley, Robert H., Sr., 3,705,935.
Patchett, Arthur A., to Merck & Co., Inc. Sulfonylphenylphosphonic acids. 3,705,920, Cl. 260-502.500.
Patel, Chandra Kumar Naranbhai: *See—*
Ippen, Erich Peter; Patel, Chandra Kumar Naranbhai; and Stolen, Rogers Hall, 3,705,992.
Pebra GmbH, Braun, Paul: *See—*
Fritsch, Walter; Hetzinger, Erich; and Worner, Karl, 3,705,508.
Pellet, William, to United States of America, Army. Spin switch. 3,705,965, Cl. 200-61.530.
Pereyra, Armand J. Necktie rack. 3,705,653, Cl. 211-13.000.
Perry, William C.; Puttock, Eugene F.; and Schreiber, Ronald S., to Mallinckrodt Chemical Works. Agglomeration of phosphor materials prior to calcination to eliminate calcining in receptacles. 3,705,933, Cl. 264-117.000.
Persson, John A. Joining of prebaked electrodes. 3,705,947, Cl. 13-18.000.
Perstnev, Samuil Nisonovich: *See—*
Okorokov, Ivan Fedorovich; Bogdanov, Gorgy Porfirievich; Sorokin, Konstantin Alexandrovich; Onischenko, Anatoly Fedorovich; Ziborov, Pavel Efimovich; and Perstnev, Samuil Nisonovich, 3,705,559.
Petchell, Roy Kenneth: *See—*
Lumb, Melvyn; Macey, Peter Edward; Wright, Richard Donald; and Petchell, Roy Kenneth, 3,705,841.
Peters, Claudius, Aktiengesellschaft: *See—*
Hamburg, Karl-Heinz, 3,705,620.
Peters, Homer D. F., to Owens-Illinois, Inc. Liquid flow proportioning system for metering into a glass batch. 3,705,792, Cl. 65-134.000.
Petrucco, Richard J.: *See—*
Fau, Paul; and Petrucco, Richard J., 3,705,853.
Pflanz, Herbert M., to Allis-Chalmers Manufacturing Company. Series-parallel electrical circuit. 3,706,012, Cl. 317-157.000.
Pickles, Cynthia Joan; and Bishop, Nigel Douglas, to Imperial Chemical Industries Limited. Pesticidal carbamate derivatives of naphthaquinones. 3,705,914, Cl. 260-396.00r.
Pietrzak, Joe P.: *See—*
Sayre, Robert E.; Campbell, Lewis B.; and Pietrzak, Joe P., 3,705,831.
Pileckis, John, to Honeywell Inc. Thyristor firing control circuit. 3,705,990, Cl. 307-252.00b.
Pioneer Electronic Corporation: *See—*
Yanagida, Kiyoshi, 3,706,021.
Piretti, Giancarlo; and Castelli, Leonida, to Anonima Castelli S.A.S. Three position folding seat. 3,705,744, Cl. 297-55.000.
Pitts, Charles A., to Dow Chemical Company, The. Slip and drag block assembly. 3,705,624, Cl. 166-216.000.
Placek, Donald D., to North American Manufacturing Company, The. Safety shutoff valve structure and method. 3,705,594, Cl. 137-1.000.
Platzman, Michael M. Revenue control system for toll roads. 3,705,976, Cl. 235-61.80a.
Plavskikh, Vladimir Dmitrievich: *See—*
Sudnishnikov, Boris Vasilievich; Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tupitsyn, Konstantin Konstantinovich; and Plavskikh, Vladimir Dmitrievich, 3,705,632.
Plotnikoff, Nicholas Peter: *See—*
Garmaise, David Lyon; Paris, Gerard Yvon; and Plotnikoff, Nicholas Peter, 3,705,902.
Podolsky, Viktor Grigorievich; Balkarei, Iosif Mikhailovich; and Grigoriyants, Sergei Mikhailovich, to Proektny I Nanchno-Issledovatelsky Institut. Vibration-absorbing support. 3,705,702, Cl. 248-20.000.
Polacoat, Inc.: *See—*
Huber, Douglas B., 3,705,757.
Polaroid Corporation: *See—*
Farney, Leonard C.; and Haberlin, Richard J., 3,705,804.
Gold, Nicholas, 3,705,542.
Klein, Peter O.; and Reid, Jerome L., 3,705,798.
Paglia, Richard, 3,705,537.
Reed, John M.; Reynard, John M.; and Scibilia, Peter A., 3,705,540.
Polit, Neil A.; and Enskat, Albert G., to Xerox Corporation. Article handling apparatus. 3,705,719, Cl. 271-3.000.
Pollard, Richard J.: *See—*
Bow, William J.; and Pollard, Richard J., 3,705,494.
Polytronic Ltd.: *See—*
Thalmann, Claude, 3,705,725.
Portec, Inc.: *See—*
Berry, Gordon J., Jr., 3,705,994.
Porter, C. O., Machinery Company: *See—*
Greenley, Henry R.; and Craig, William E. (said Greenley assor. to), 3,706,072.
Precision Metalsmiths, Inc.: *See—*
Watts, Claude H., 3,705,615.
Presley, C. T.: *See—*
Argabright, Perry A.; Hummel, Jack L.; and Presley, C. T., 3,705,627.
Pritulsky, James: *See—*
Keller, Joseph Richard; and Pritulsky, James, 3,705,756.
Proektny I Nanchno-Issledovatelsky Institut: *See—*
Podolsky, Viktor Grigorievich; Balkarei, Iosif Mikhailovich; and Grigoriyants, Sergei Mikhailovich, 3,705,702.
Prym-Werke, William, KG: *See—*
Gustavsson, Pertti O., 3,705,446.
Purrer, Josef, to Maschinenfabrik Fahr AG. Field harvester for row crops. 3,705,482, Cl. 56-13.900.
Putscher, Johann: *See—*
Wagner, Karl; Nicolay, Klaus; Schuchardt, Gerhard; and Putscher, Johann, 3,705,539.
Putscher, Johann, to Agfa-Gevaert Aktiengesellschaft. Photographic apparatus for use with impeller-actuated sources of artificial light. 3,705,538, Cl. 95-11.50r.
Puttock, Eugene F.: *See—*
Perry, William C.; Puttock, Eugene F.; and Schreiber, Ronald S., 3,705,933.
Quaal, John A.: *See—*
Halbeck, Werner B.; Quaal, John A.; and Robbins, Clyde F., 3,706,100.
Qualitrol Corporation: *See—*
Romanowski, Robert F.; and Cellini, Michael, 3,705,964.
Quan, William: *See—*
Sanders, Ray W.; Luce, David W.; and Quan, William, 3,705,986.
Quarmby, Robert C.: *See—*
Matts, George A.; and Quarmby, Robert C., 3,705,609.
Quinlan, Joseph B.; and Scanlon, John J., Jr., to United States of America, Army. Ammunition. 3,705,549, Cl. 102-40.000.
Rabussier, Bernard Aranton: *See—*
Hennart, Claude; Martin, George; Mandon, Jean-Pierre; and Rabussier, Bernard Aranton, 3,705,941.
Rachel, Todd L.: *See—*
Horn, John W.; and Rachel, Todd L., 3,705,571.
Rahman, Abdul R.; and Schafer, Glenn R., to United States of America, Army. Directly edible, compacted and dehydrated fruit bar. 3,705,814, Cl. 99-204.000.
Rains, John W. Compressed cigarette smoke. 3,705,590, Cl. 131-170.00a.
Rajakovics, Gundolf E., to Gebr. Boehler & Co., AG. Arrangement for compensating for changes in the length of pipes and the like. 3,705,734, Cl. 285-41.000.
Ram Jet Corporation: *See—*
Hruby, John O., Jr., 3,705,686.
Ram, Michael J., to Celanese Corporation. Lateral positioning of moving fibrous materials. 3,705,675, Cl. 226-3.000.
Ramis, Jean: *See—*
Blanie, Marie Jean Michel Paul; Ramis, Jean; and Robert, Henri R., 3,705,667.
Rank Organisation Limited, The: *See—*
Cook, Gordon Henry; and Lajrent, Francois, 3,705,759.
Ranks Hovis McDougall Limited: *See—*
Barker, Sidney Alan; Kennedy, John Frederick; and Cray, Charles John, 3,705,890.

Ratowsky, Simon, to Ontario Development Corporation. Method of processing photographic material. 3,705,544, Cl. 95-93.000.

Rausch, John T.; and Skunda, Michael, to General Motors Corporation. Spark plug sealing gasket. 3,705,951, Cl. 174-152.500.

Ray, Manuel C., to National Research and Chemical Company. Automatic chemical mixer. 3,705,598, Cl. 137-101.250.

Raytheon Company: *See—*
Cherwek, Roland A., 3,706,095.

RCA Corporation: *See—*
Bridgewater, Thomas Austin, 3,706,016.
Dean, Raymond Harkless, 3,706,014.

Reactor Centrum Nederland: *See—*
Theyse, Frederik Herman, 3,706,059.

Reade, Stephen E.: *See—*
Kelem, Lester S.; and Reade, Stephen E., 3,706,049.

Rebuffe, Pascal: *See—*
Jouet, Etienne; and Rebuffe, Pascal, 3,705,618.

Reed, John M.; Reynard, John M.; and Scibilia, Peter A., to Polaroid Corporation. Electronic flash unit. 3,705,540, Cl. 95-11.50r.

Reekstin, John Peter, Jr.: *See—*
Bobeck, Andrew Henry; Kowalchuk, Roman; and Reekstin, John Peter, Jr., 3,706,081.

Rees, James D., to Xerox Corporation. Optical recorder. 3,705,543, Cl. 95-4.50r.

Regat, Charles Y., to Schlumberger Technology Corporation. Induction logging methods and apparatus using more than one phase component of the received signal. 3,706,025, Cl. 324-6.000.

Regel, Erik: *See—*
Schlor, Hanshelmut; Hoffmann, Hellmut; Regel, Erik; and Scheinpflug, Hans, 3,705,930.

Regitz, William M.; and Dundon, Thomas M., to Honeywell, Inc. Mass memory system. 3,706,084, Cl. 340-174.100.

Regnier, Gilbert; Canevari, Roger; and Duhault, Jacques, to Societe en nom Collectif "Science Union et Cie". Benzamidoethyl piperazines. 3,705,899, Cl. 260-256.40n.

Reichhelm, Robert; and Morrison, Albert, Jr., to Burnham Corporation. Liquid fuel burner having reduced thermal stress and rapid start-up time. 3,705,784, Cl. 431-116.00a.

Reichhold-Albert-Chemie AG: *See—*
Stieger, Gerhard; and Flasch, Josef, 3,705,862.
Stieger, Gerhard; and Flasch, Josef, 3,705,864.

Reid, Jerome L.: *See—*
Klein, Peter O.; and Reid, Jerome L., 3,705,798.

Reinert, John R., to Motorola, Inc. Synchronous parallel counter with common steering of clock pulses to binary stages. 3,706,043, Cl. 328-42.000.

Reinhards, Gunter: *See—*
Stosberg, Herbert; Fleischmann, Horst; Reinhards, Gunter; and Engels, Siegfried, 3,705,438.

Reis, James John, to Northrop Corporation. Method and apparatus for testing the condition of a machine. 3,705,516, Cl. 73-71.400.

Reitz, Roderick, to General Electric Company. Lightning arrester capacitive grading circuit mounting means. 3,706,009, Cl. 317-68.000.

Renfroe, Harris B.: *See—*
Hall, Luther A. R.; Gurney, John A.; and Renfroe, Harris B., 3,705,918.

Rensvold, Roger F., to Halliburton Company. Destruction of oil slicks. 3,705,782, Cl. 431-7.000.

Rentsch, Hans J., to Medline Industries, Inc. Syringe assembly. 3,705,583, Cl. 128-232.000.

Research Corporation: *See—*
Roth, Wilfred, 3,705,576.

Research Institute for Medicine and Chemistry Inc.: *See—*
Barton, Derek Harold Richard, 3,705,893.

Retch, Ernst: *See—*
Zwahlen, Guenther; Retch, Ernst; and Schoohf, Karl Ewald, 3,705,816.

Retzer, Theodore C.; and Kearney, Joseph P., to Westinghouse Electric Corporation. Current-rated short-arc lamp for light projection apparatus. 3,706,000, Cl. 313-214.000.

Rex Chainbelt Inc.: *See—*
Morris, John M.; and Schrader, Preston H., 3,706,018.

Reynard, John M.: *See—*
Reed, John M.; Reynard, John M.; and Scibilia, Peter A., 3,705,540.

Reynolds, Clarke: *See—*
Duckett, John W.; Brooks, Edward A.; and Reynolds, Clarke, 3,705,566.

Richardson, Thomas L.: *See—*
McPherson, Frank H.; Lownes, Irvin S., Jr.; and Richardson, Thomas L., 3,706,074.

Riegel Textile Corporation: *See—*
Tollison, James W.; and Kelley, Joe, 3,705,607.

Rigal, Pierre: *See—*
Morini, Jean-Louis; Rigal, Pierre; and Leduc, Jean, 3,705,579.

Riley, Lloyd D., to Filper Corporation. Packaging machine and method. 3,705,475, Cl. 53-35.000.

Rioux, Christian Paul Gilbert, to Societe Nationale d'Etudes et Construction de Moteurs d'Aviation. Gas turbine power plants. 3,705,775, Cl. 417-411.000.

Ripley, Richard E., to Textron, Inc. Expansible bracelet. 3,705,490, Cl. 59-79.00r.

Robbins, Clyde F.: *See—*
Halbeck, Werner B.; Quaal, John A.; and Robbins, Clyde F., 3,706,100.

Robert, Henri R.: *See—*
Blanie, Marie Jean Michel Paul; Ramis, Jean; and Robert, Henri R., 3,705,667.

Roder, Georg Adam, to Messer Griesheim GmbH. Process and device for igniting oxyacetylene cutting torches. 3,705,781, Cl. 431-6.000.

Rodzen, Richard A.: *See—*
Marcum, Alfred L., Jr.; Burns, Marvin; and Rodzen, Richard A., 3,705,426.

Rogers, Jimmy D.: *See—*
Austin, Frederick H.; Rogers, Jimmy D.; and Wormser, Joseph J., 3,706,038.

Rogers, William W.: *See—*
Bradshaw, Thurman O.; and Rogers, William W., 3,706,068.

Rohde, Robert P.: *See—*
Brewer, Lee M.; and Rohde, Robert P., 3,705,685.

Rohm and Haas Company: *See—*
Konen, Patricia F., 3,705,645.

Romanowski, Robert F.; and Cellini, Michael, to Qualitrol Corporation. Position indicating instrument with circuit control switches. 3,705,964, Cl. 200-56.00r.

Rossi, Harry; and Myers, John H., to Continental Can Company, Inc. Carton with article-centering means. 3,705,681, Cl. 229-40.000.

Roth, Wilfred, to Research Corporation. Incubators for infants. 3,705,576, Cl. 128-1.00b.

Roto Diesel: *See—*
Garnier, Georges, 3,705,692.

Royalty Designs of Florida: *See—*
Francis, James G.; and Pasley, Robert H., Sr., 3,705,836.
Francis, James G.; and Pasley, Robert H., Sr., 3,705,935.

Ruf, Max, to Audi NSV Auto-Union Aktiengesellschaft and Wankel G.m.b.H. Rotary combustion engine with liquid-cooled rotor. 3,705,570, Cl. 123-8.450.

Rukavina, Louis, Jr.; Brower, Robert L.; and Lane, Daniel J., to Cleaning Systems Industries, Inc. Combination high pressure washer and vacuum. 3,705,437, Cl. 15-302.000.

Rumpf, Paul; and Blouri, Byouk. Manufacture of long chain alpha-olefines from mixtures of heavy paraffins. 3,705,926, Cl. 260-683.00r.

Rumyantsev, Alexandr Stepanovich: *See—*
Vishnitsky, Alexandr Lazarevich; Shapiro, Lev Mironovich; Kazantsev, Evgeny Andreevich; Shvartsman, Benyamin Markovich; Shilov, Georgy Petrovich; Nemilov, Evgeny Fedorovich; Baisupov, Izmail Abdulovich; Masterov, Vasily Fomich; and Rumyantsev, Alexandr Steanovich, 3,705,848.

Russmann, Horst; and Determann, Helmut, to Biotest-Serum-Institut, GmbH. Apparatus for sterile material exchange. 3,705,652, Cl. 210-321.000.

Ruti Machinery Works Ltd.: *See—*
Stucki, Peter, 3,705,606.

Ryan, Charles W., to Lilly, Eli, and Company. Isomer resolution. 3,705,900, Cl. 260-284.000.

Saffro, Dennis W. Preformed surgical sponge. 3,705,585, Cl. 128-303.100.

Sage Laboratories, Inc.: *See—*
Tenenholtz, Robert, 3,706,042.

Sakamoto, Minoru. Circular saw and attachment therefor. 3,705,611, Cl. 83-478.000.

Sakawa, Katuaki; and Kozawa, Tetuo, to Brother Kogyo Kabushiki Kaisha. Cyclic sewing machine. 3,705,561, Cl. 112-67.000.

Salvert, Bernard, to Electronique Marcel Dassault. Method and a device for eliminating the noise in a transmission chain of radio-electric signals. 3,706,045, Cl. 328-165.000.

Sander, Hans-Georg, to VDO Tachometer Werke Adolf Schindling, GmbH. Moving coil measuring instrument. 3,706,034, Cl. 324-154.00r.

Sanders, Kenneth Douglas; Botley, Geoffrey Sword; and Taylor, Jack William, to Credit Keys Limited. Lock controlled electric switch mechanisms. 3,705,507, Cl. 70-364.00r.

Sanders, Ray W.; Luce, David W.; and Quan, William, to Computer Transmission Corporation. Optical data transmission system. 3,705,986, Cl. 250-199.000.

Sandor, Bela Thomas, to Automated Feed Mills Limited. Disintegrating and mixing apparatus especially for animal foods. 3,705,695, Cl. 241-34.000.

Sandoz Ltd.: *See—*
Troxler, Franz, 3,705,907.

Sarracino, John B. Umbilical cord clamp. 3,705,586, Cl. 128-346.000.

Sato, Akira: *See—*
Nakazawa, Giyoshiyuki; Nakamura, Yashuharo; Takei, Haruo; Sato, Akira; and Ikeda, Tadashi, 3,705,809.

Sato, Sigeta: *See—*
Kato, Masaaki; and Sato, Sigeta, 3,705,846.

Savit, Carl H. Method of geophysical prospecting by measuring the attenuation of seismic waves in the earth. 3,706,069, Cl. 340-15.5cp.

Saxer, Robert A. Splash arrester having impact member supported in housing. 3,705,672, Cl. 222-567.000.

Sayre, Robert E.; Campbell, Lewis B.; and Pietrzak, Joe P., to General Motors Corporation. Method of fabricating an insulated storage bin. 3,705,831, Cl. 156-227.000.

Scanlon, John J., Jr.: *See—*
Quinlan, Joseph B.; and Scanlon, John J., Jr., 3,705,549.

Scaramucci, Domer. Self-aligning trunnion ball valve. 3,705,707, Cl. 251-84.000.
Schafer, Glenn R.: *See*—
Rahman, Abdul R.; and Schafer, Glenn R., 3,705,814.
Scheinpflug, Hans: *See*—
Schlor, Hanshelmut; Hoffmann, Hellmut; Regel, Erik; and Scheinpflug, Hans, 3,705,930.
Schell, Sidney T.: *See*—
Brickner, David R.; and Schell, Sidney T., 3,705,980.
Schenk, Robert J.: *See*—
Laerman, Lothar; and Schenk, Robert J., 3,706,010.
Schetinin, Anatoly Alexandrovich. Steam pressure and temperature reducing installation. 3,705,684, Cl. 236-12.000.
Schimmer, Rigobert; Gesing, Horst; and Cordes, Karl-Heinz, to Licentia Patent-Verwaltungs, G.m.b.H. Semiconductor with multilayer contact. 3,706,015, Cl. 317-234.00r.
Schlor, Hanshelmut; Hoffmann, Hellmut; Regel, Erik; and Scheinpflug, Hans, to Farbenfabriken Bayer Aktiengesellschaft. Trithiolphosphoric acid esters. 3,705,930, Cl. 260-964.000.
Schlosser, Donald K.: *See*—
Muzyka, Donald R.; and Schlosser, Donald K., 3,705,827.
Schlumberger Technology Corporation: *See*—
Nicolas, Yves, 3,705,979.
Regat, Charles Y., 3,706,025.
Schonfeld, Steven Edward, to Firestone Tire & Rubber Company, The. Catalysis of polyamide formation. 3,705,881, Cl. 260-78.00l.
Schoohf, Karl Ewald: *See*—
Zwahlen, Guenther; Retch, Ernst; and Schoohf, Karl Ewald, 3,705,816.
Schoonman, Willem, to Lummus Company, The. Air-cooled heat exchanger. 3,705,621, Cl. 165-112.000.
Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, to Farbenfabriken Bayer Aktiengesellschaft. N-isopropyl-phosphoroamido-thioates. 3,705,929, Cl. 260-951.000.
Schrader, Preston H.: *See*—
Morris, John M.; and Schrader, Preston H., 3,706,018.
Schreiber, Ronald S.: *See*—
Perry, William C.; Puttock, Eugene F.; and Schreiber, Ronald S., 3,705,933.
Schroner, Wera, to Flotti Puppenkleiderspiele Gesellschaft mit beschrankter Haftung. Blank and dress made therefrom. 3,705,427, Cl. 2-74.000.
Schubert, Dudley J.; and Howe, Donald R. Collapsible bulk handling bin. 3,705,663, Cl. 217-12.00r.
Schuchardt, Gerhard: *See*—
Wagner, Karl; Nicolay, Klaus; Schuchardt, Gerhard; and Putscher, Johann, 3,705,539.
Schuermann, Fritz: *See*—
Jankowski, Alfons; and Schuermann, Fritz, 3,705,646.
Schultze, Hans-Joachim, to Inventa AG. Apparatus for separating crystals from a melt. 3,705,682, Cl. 233-11.000.
Schuster, Paul Alfred, to Bell Telephone Laboratories, Incorporated. Programmable digital filter apparatus. 3,706,076, Cl. 340-172.500.
Schwartz, Frederic W., to Cable Electric Products, Inc. Combination light and switch. 3,706,004, Cl. 315-71.000.
Schwartzman, Gilbert. Dispenser with dip tube. 3,705,668, Cl. 222-207.000.
Schwartzwalder, Karl: *See*—
McDougal, John A.; and Schwartzwalder, Karl, 3,705,558.
Schwarz, Leonard H., to Dunham-Bush, Inc. Cleanable tube within a tube heat exchanger and method of forming modular readers therefor. 3,705,622, Cl. 165-143.000.
Schweiger & Schweizer AG: *See*—
Zuhlke, Gerhard, 3,705,454.
Schweikert, Karl: *See*—
Bauerle, Oskar; Kubel, Wilfried; Munster, Ernst; Schweikert, Karl; and Strobl, Georg, 3,705,997.
Sci-Tek Computer Center, Inc.: *See*—
Andreas, Henry L., 3,705,772.
Scibilia, Peter A.: *See*—
Reed, John M.; Reynard, John M.; and Scibilia, Peter A., 3,705,540.
Scott, O. M., and Sons Company, The: *See*—
Czurak, Richard H.; and Thompson, Robert M., 3,705,794.
Scott, William Bruce; and Simpson, Peter Laurence, to Gulf Oil Canada Limited. Dibenzothiophene sulfonyl halides. 3,705,909, Cl. 260-329.300.
Seaberg, David H., to Case, J. I., Company. Hydraulic tilt and pitch control for dozer blade. 3,705,631, Cl. 172-804.000.
Searle, John Gilbert, to Allwood Searle & Timney Limited. Friction welding apparatus. 3,705,678, Cl. 228-2.000.
Sedliar, Ronald M.; Aepli, Otto T.; and Burkard, Perle N., to BASF Wyandotte Corporation. Additives for alkali cleaning systems. 3,705,856, Cl. 252-156.000.
Seelandt, Karl H.; and Wentworth, Hobart L., to Sola Basic Industries, Inc. Internally heated rotary drum furnace with smoke abater. 3,705,711, Cl. 263-32.00r.
Seelig, Wolfgang Hagen: *See*—
Banse, Karlheinz Victor Hermann; Seelig, Wolfgang Hagen; Steinger, Jurg Hugo; and Herziger, Gerd Bernd, 3,705,999.
Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Phase-locked signal source. 3,706,046, Cl. 330-4.500.
Sela, Ramy M. Musical head gears. 3,705,466, Cl. 46-1.00f.
Shapiro, Lev Mironovich: *See*—
Vishnitsky, Alexandr Lazarevich; Shapiro, Lev Mironovich; Kazantsev, Evgeny Andreevich; Shvartsman, Benyamin Markovich; Shilov, Georgy Petrovich; Nemilov, Evgeny Fedorovich; Baisupov, Izmail Abdulovich; Masterov, Vasily Fomich; and Rumyantsev, Alexandr Steanovich, 3,705,848.
Sheetz, Richard S., to Park-Ohio Industries, Inc. Method and apparatus for quench hardening elongated workpieces. 3,705,715, Cl. 266-4.00a.
Shell Oil Company: *See*—
Badrian, Willy H. J., 3,705,835.
Van Eek, Wouter H.; Busking, Bob E.; and Van Gils, Adrianus W., 3,705,623.
Whitten, Derrill Gene; and Vanmeurs, Peter, 3,705,625.
Wittenwyler, Clifford V., 3,705,872.
Sherwood, Charles Frederick: *See*—
Luckey, George William; and Sherwood, Charles Frederick, 3,705,858.
Sheward, Marvin L. Universally-mountable gas service regulator. 3,705,599, Cl. 137-116.500.
Shibata, Minoru; Yusa, Makoto; Nakata, Hisao; and Harada, Michisuke, to Kansai Paint Company Limited and Nippon Soda Company Limited. Aqueous coating compositions. 3,705,866, Cl. 260-23.70a.
Shields, John Bickford, to American Potato Company. Process for making a fried onion product. 3,705,812, Cl. 99-100.00p.
Shilov, Georgy Petrovich: *See*—
Vishnitsky, Alexandr Lazarevich; Shapiro, Lev Mironovich; Kazantsev, Evgeny Andreevich; Shvartsman, Benyamin Markovich; Shilov, Georgy Petrovich; Nemilov, Evgeny Fedorovich; Baisupov, Izmail Abdulovich; Masterov, Vasily Fomich; and Rumyantsev, Alexandr Steanovich, 3,705,848.
Shiomi, Masanao; and Narumi, Tadataka, to Toyota Jidosha Kogyo Kabushiki Kaisha. Collision force absorption device. 3,705,740, Cl. 293-89.000.
Shock, John P. Auxiliary drive and support mechanism for mobile vehicles. 3,705,638, Cl. 180-14.00a.
Sholly, William C., Jr.; and Carruthers, George A., to Turbo Machine Company. Apparatus and method for producing a high degree of twist in yarn. 3,705,488, Cl. 57-77.400.
Shroyer, Larry L., to Lyall Electric, Inc. Electrical connector. 3,706,066, Cl. 339-59.00r.
Shvartsman, Benyamin Markovich: *See*—
Vishnitsky, Alexandr Lazarevich; Shapiro, Lev Mironovich; Kazantsev, Evgeny Andreevich; Shvartsman, Benyamin Markovich; Shilov, Georgy Petrovich; Nemilov, Evgeny Fedorovich; Baisupov, Izmail Abdulovich; Masterov, Vasily Fomich; and Rumyantsev, Alexandr Steanovich, 3,705,848.
Sickels, David W., to Electrogenics, Inc. Method for electrochemical deburring. 3,705,843, Cl. 204-129.500.
Siebert, William, Jr.: *See*—
Jones, Robert C.; and Siebert, William, Jr., 3,706,099.
Siegel, William Jordan. Tool holder. 3,705,680, Cl. 228-57.000.
Siemens Aktiengesellschaft: *See*—
Emels, Reimer, 3,705,567.
Keller, Wolfgang, 3,705,789.
Ott, Hanns; and Latussek, Hanns Peter, 3,705,752.
Touchy, Wolfgang; and Bungenstab, Eckart, 3,705,825.
Sierra, Rafael B. Biopsy needle with eccentrically-mounted cutting tip. 3,705,577, Cl. 128-2.00b.
Siller, Imre, to Grundig E. V. Elektro Mechanische Versuchsunstaft. Tape recorder and cassette for magnetic tape. 3,705,699, Cl. 242-199.000.
Silliker, John H.: *See*—
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Simpson, Peter Laurence: *See*—
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Singer Company, The: *See*—
Laerman, Lothar; and Schenk, Robert J., 3,706,010.
Sirughar, Malcolm K.: *See*—
Glenn, Edwin E., Jr.; Slover, Vasel R.; and Sirughar, Malcolm K., 3,705,626.
Sjoo, Bertil Roland, to Hesselman Bil-Aero AB. Single-lever mechanism. 3,705,519, Cl. 74-471.0xy.
Skillicorn, Douglas E., to Goodrich, B. F., Company, The. Liquid thioester-terminated polymers. 3,705,882, Cl. 260-79.000.
Skopalik, Josef; Svoboda, Vladimir; and Opatril, Vaclav, to Elitex. Apparatus for forming a system of weft threads for further processing in textile machines. 3,705,503, Cl. 66-84.000.
Skunda, Michael: *See*—
Rausch, John T.; and Skunda, Michael, 3,705,951.
Slantsekhimichesky Kombinat "Kiviyli" U.S.S.R.: *See*—
Mikhelis, Konstantin Alexandrovich; Fomina, Alexandr Sergeevna; Murumets, Kirill Vladimirovich; Ulanen, Yalmar Semenovich; Kotov, Anatoly Mikhailovich; Volkov, Timofei Mikhailovich; Itsikson, Boris Semenovich; Suurmaa, Raivo Alexandrovich; Viks, Paavo Yaanvich; and Berestovsky, Georgy Grigorievich, 3,705,793.
Slocum, John L. Method of and an apparatus for reclaiming metal from scrap wire and cable. 3,705,694, Cl. 241-14.000.
Slover, Vasel R.: *See*—
Glenn, Edwin E., Jr.; Slover, Vasel R.; and Sirughar, Malcolm K., 3,705,626.
Smale, Charles H., to General Motors Corporation. Oval jet nozzle. 3,705,688, Cl. 23-265.390.

Smillinger, Carl W., to Bethlehem Steel Corporation. Wire rope with permanently lubricated core. 3,705,489, Cl. 57-149.000.

Smith, A. O., Corporation: *See—*
Duncan, Angelo N., 3,705,574.

Smith, Donald E., to United States of America, Army. Method to prevent toxic gas emission. 3,705,474, Cl. 53-22..00a.

Smith, Leslie Walter: *See—*
Culvenor, Claude Charles Joseph; Edgar, John Alexander; Smith, Leslie Walter; Tweeddale, Helen Joan; Jago, Marjorie; and French, Eric Ancelot, 3,705,905.

Smith, Marion D., to General Motors Corporation. Dual path power transmission. 3,705,521, Cl. 74-759.000.

Smith, Robert A.; and Wang, Ting-I, to Atlantic Richfield Company. Vapor phase process for producing vinyl allyl ether. 3,705,924, Cl. 260-614.00r.

Smolinski, Richard C. Illuminated serving tray. 3,705,982, Cl. 240-6.40r.

Smollinger, Carl W. Vibration damped fitting. 3,705,445, Cl. 24-123.000.

Snam Progetti S.p.A.: *See—*
Carli, Roberto; and Gordini, Silvano, 3,705,787.

Sobel, Johannes: *See—*
Nittel, Fritz; Sobel, Johannes; and Himmelmann, Wolfgang, 3,705,805.

Societa Italiana Apparecchi de Precisione S.p.A.: *See—*
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Societe Anonyme Automobiles Citroen: *See—*
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Societe Anonyme dite Ciments: *See—*
Allegre, Rene; and Allegre, Raymond, 3,705,815.

Societe Civile d'Inventions Idees: *See—*
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Societe de Wendel et Compagnie: *See—*
Andriussi, Francois Georges, 3,705,709.

Societe en nom Collectif "Science Union et Cie": *See—*
Regnier, Gilbert; Canevari, Roger; and Duhault, Jacques, 3,705,899.

Societe Lannionaise d'Electroniqise: *See—*
Jacob, Jean-Baptiste, 3,705,958.

Societe Nationale des Petroles d'Aquitaine: *See—*
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Societe Nationale d'Etudes et Construction de Moteurs d'Aviation: *See—*
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Societe Technique et Commercial d'Installations Industrielles "Luceat": *See—*
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Sola Basic Industries, Inc.: *See—*
Seelandt, Karl H.; and Wentworth, Hobart L., 3,705,711.

Song, Jung Hoon: *See—*
Ladd, Fred; and Song, Jung Hoon, 3,705,762.

Sorg, Paul: *See—*
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Sorokin, Konstantin Alexandrovich: *See—*
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Southern Cross Industries, Inc.: *See—*
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Sperry Rand Corporation: *See—*
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Spitsyn, Boris Vladimirovich: *See—*
Dzevitsky, Boris Eduardovich; Spitsyn, Boris Vladimirovich; Kochkin, Dmitry Alexandrovich; and Deryagin, Boris Vladimirovich, 3,705,937.

Springfield Wire Inc.: *See—*
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Square D Company: *See—*
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Squibb, E. R., & Sons, Inc.: *See—*
Narayanan, Venkatachala Lakshmi; and Dolfini, Joseph Edward, 3,705,906.

Staeudle, Hans, to Zeiss-Stiftung Carl; d/b/a Zeiss, Carl. Range finder. 3,706,093, Cl. 343-6.00r.

Staley, A. E., Manufacturing Company: *See—*
Tuschhoff, John V.; and Hanson, Cleo E., 3,705,891.

Standard Alliance Industries, Inc.: *See—*
Aksamit, Stephen M., 3,705,554.

Standard Oil Company: *See—*
Hollstein, Elmer J.; and Hall, Lewis W., Jr., 3,705,885.

Starks, Charles M.; and Mc Claflin, Gifford G., to Continental Oil Company. Method for separation of fatty alcohols from hydrocarbons. 3,705,925, Cl. 260-643.00d.

Starr, Arthur T.; and David, Edwards G., to Xerox Corporation. Channel shaping filter. 3,706,054, Cl. 333-28.00r.

Stein, Edward S.: *See—*
King, William L.; and Stein, Edward S., 3,705,963.

Steinger, Jurg Hugo: *See—*
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Stenberg-Flygt AB: *See—*
Nordin, Lars-Erik Reinhold; and Mollerfors, Lars William Anshelm, 3,705,602.

Stephan, John T.; and Golick, A. J., to Commercial Solvents Corporation. Process for joining cellulosic articles utilizing a two part adhesive, wherein the first part is a partially reacted condensate of resorcinol and formaldehyde, and the second part is n oxazoladine. 3,705,832, Cl. 156-310.000.

Stieger, Gerhard; and Flasch, Josef, to Reichhold-Albert-Chemie AG. Water-soluble binders prepared from phenolic resin and monoolefinically unsaturated acid. 3,705,862, Cl. 260-19.0ua.

Stieger, Gerhard; and Flasch, Josef, to Reichhold-Albert-Chemie AG. Electrophoretic deposition. 3,705,864, Cl. 260-22.00r.

Stiles, Lester W., to Weyerhaeuser Company. Method for forming a uniform continuous web of paper. 3,705,847, Cl. 204-181.000.

Stoddard, Ivan; and Broughton, Terence D., to USM Corporation. Foot form and shoemaking method. 3,705,433, Cl. 12-133.00r.

Stolen, Rogers Hall: *See—*
Ippen, Erich Peter; Patel, Chandra Kumar Naranbhai; and Stolen, Rogers Hall, 3,705,992.

Stolzer, Claus; Hammann, Igeborg; and Unterstengofer, Gunther, to Farbenfabriken Bayer Aktiengesellschaft. Alkyl-or aryl-thiolphosphonic acid o-alkyl-S-(N,N-Di-substituted amino carbamyl)-methyl esters. 3,705,927, Cl. 260-923.000.

Stolzer, Claus; Hammann, Ingeborg; and Unterstenhofer, Gunter, to Farbenfabriken Bayer Aktiengesellschaft. O-alkyl-N-monoalkylamido-(thiono) thiolphosphoric acid S-(N',N'-dialkylamino-carbamyl)-methyl esters. 3,705,928, Cl. 260-923.000.

Stosberg, Herbert; Fleischmann, Horst; Reinhards, Gunter; and Engels, Siegfried, to Tente-Rollen Gesellschaft mit beschrankter Haftung Companie, Firma. Locable runners. 3,705,438, Cl. 16-35.000.

Straubing, Irlbach B.: *See—*
Jirka, Karl; Gutlhuber, Johann; and Straubing, Irlbach B., 3,705,950.

Strickrodt, Jorg; Engemann, Gotthard; and Eulenhofer, Hans-Gerd, to Veba-Chemie Nord GmbH. Method of preparing β-methyl adipic acid. 3,705,921, Cl. 260-531.00r.

Strobl, Georg: *See—*
Bauerle, Oskar; Kubel, Wilfried; Munster, Ernst; Schweikert, Karl; and Strobl, Georg, 3,705,997.

Stucki, Peter, to Ruti Machinery Works Ltd. Rotating disk arrangement on a wave-type loom. 3,705,606, Cl. 139-12.000.

Stumpf, Marvin D.; and Koenig, Elmer A. Breech loaded syringe and method of breech loading same. 3,705,582, Cl. 128-218.00p.

Sudnishnikov, Boris Vasilievich; Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tupitsyn, Konstantin Konstantinovich; and Plavskikh, Vladimir Dmitrievich, to Institut Gornogo Dela Sibirskogo otdelenia Akademii. Reversible percussion devicefor making holes in ground by compacting the latter. 3,705,633, Cl. 173-91.000.

Sullivan, Alfred Bay, to Monsanto Company. Method for preparation of organic polysulfides. 3,705,923, Cl. 260-608.000.

Sun Oil Company: *See—*
Young, Einar T., 3,705,596.

Sunbeam Plastics Corporation: *See—*
Gach, Peter P., 3,705,662.

Superior Concrete Accessories, Inc.: *See—*
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Suurmaa, Raivo Alexandrovich: *See—*
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Svoboda, Vladimir: *See—*
Skopalik, Josef; Svoboda, Vladimir; and Opatril, Vaclav, 3,705,503.

Swanson, Richard Maurice, to Bell Telephone Laboratories, Incorporated. Line lockout circuit. 3,705,959, Cl. 179-18.00f.

Sweeney, Martin J.: *See—*
Dyke, Richard W.; and Sweeney, Martin J., 3,705,946.

Sygnator, Henry A., to Illinois Tool Works Inc. Snap-in fastener. 3,705,442, Cl. 24-73.00p.

Sykes, Donald J.; Kroll, Harry; and Finch, Theron R. Polyquaternary ammonium bisulfites, sulfites an pyrosulfites as developer perservatives. 3,705,806, Cl. 96-664.000.

Tajiri, Hisao: *See—*
Yamada, Hisashi; Tajiri, Hisao; and Nishizawa, Mitsugu, 3,706,023.

Takahashi, Hiroaki; and Hara, Toshito, to Fujitsu Limited. Contact material. 3,705,796, Cl. 75-173.00r.

Takei, Haruo: *See—*
Nakazawa, Giyoshiyuki; Nakamura, Yashuharo; Takei, Haruo; Sato, Akira; and Ikeda, Tadashi, 3,705,809.

Talmon, Floyd H.: *See—*
Confer, Raymond C.; and Talmon, Floyd H., 3,705,931.

Tamol, Ronald A.; and Meyer, Leo F., to Morris, Philip, Incorporated. Chemically modified film covering for apertured smoking product wrapper. 3,705,588, Cl. 131-15.00b.

Tanaka, Kazuyuki: *See—*
Oshima, Yasuo; Nakazawa, Nobuhiko; Nagasaki, Senkichi; Naito, Takeo; Osada, Yasuaki; Okusa, Naoya; Inuaki, Akira; and Tanaka, Kazuyuki, 3,705,989.

Tardoskegyi, Louis V., to Electrovert Manufacturing Co., Ltd. Wave soldering using inert gas to protect pretinned and soldered surfaces of relatively flat workpieces. 3,705,457, Cl. 29-494.000.

Taylor, Jack William: *See—*

Sanders, Kenneth Douglas; Botley, Geoffrey Sword; and Taylor, Jack William, 3,705,507.

Taylor, Richard John, to Electric & Musical Industries Limited. Automatic signal registration in colour television cameras. 3,705,839, Cl. 178-5.40m.

Telesco Brophey Limited: *See—*
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Weber, Heinz, 3,705,593.

Temple, Philip A.: *See—*
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Tenenholtz, Robert, to Sage Laboratories, Inc. Balanced mixer. 3,706,042, Cl. 325-446.000.

Tenneco Chemicals, Inc.: *See—*
Fischer, Alfred, 3,705,852.

Tenner, Oskar, to Fa. Gebauer & Lehrner. Apparatus for casting molten metal in bottom- pouring molds. 3,705,616, Cl. 164-155.000.

Tenpas, Emerson J., to Eriez Manufacturing Company. Forming machine for structural sections. 3,705,679, Cl. 228-49.000.

Tente-Rollen Gesellschaft mit beschrankter Haftung Companie, Firma: *See—*
Stosberg, Herbert; Fleischmann, Horst; Reinhards, Gunter; and Engels, Siegfried, 3,705,438.

Teranishi, Masayuki: *See—*
Fujimoto, Yasuo; Teranishi, Masayuki; and Tezuka, Toshihiko, 3,705,873.

Terry, Claude E., to Textile Rubber and Chemical Company, Inc. Carpet with a foam polyurethane backing. 3,705,834, Cl. 161-66.000.

Tetradyne Corporation, mesne: *See—*
Mueller, Frederick N., 3,705,710.

Texaco Inc.: *See—*
Greiner, Leonard; and Courtney, Welby G., 3,705,495.
Hubby, Laurence M., 3,705,532.
Wolf, Robert L.; and Mc Gann, Rodney, 3,705,496.

Textile Rubber and Chemical Company, Inc.: *See—*
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textilrbberand chcalcopan,Inc. . 370,583,412, Cl. .

Textoris, Melvin A., to General Fireproofing Company, The. Chair base. 3,705,704, Cl. 248-188.700.

Textron, Inc.: *See—*
Ripley, Richard E., 3,705,490.

Tezuka, Toshihiko: *See—*
Fujimoto, Yasuo; Teranishi, Masayuki; and Tezuka, Toshihiko, 3,705,873.

Thalmann, Claude, to Polytronic Ltd. Target and circuit means for automatically the scare of a projectile shot from a target. 3,705,725, Cl. 273-102.20a.

Theyse, Frederik Herman, to Reactor Centrum Nederland. Annular magnet. 3,706,059, Cl. 335-302.000.

Thompson, Charles H., to General Motors Corporation. Transmission control system. 3,705,642, Cl. 192-4.000.

Thompson, Robert M.: *See—*
Czurak, Richard H.; and Thompson, Robert M., 3,705,794.

Thomson, J. Brent, to Hercules Incorporated. Silyl-azidoformates. 3,705,911, Cl. 260-349.000.

Thomson-CSF: *See—*
Assouline, George; Conjeaud, Pierre; Girault, Pierre; and Leiba, Eugene, 3,705,955.
Dieulesaint, Eugene Jean; and Hartman, Pierre, 3,706,055.

Timmons, Eric: *See—*
Wilson, Eric John; Brigg, Alan Henry; and Timmons, Eric, 3,705,555.

Titov, Dmitry Vladimirovich, to Vsesojuzny Nauchno Issledrvatelsky Institut Textilnogo Legkogo Mashinostroenia. Fabric forming device for weaving looms. 3,705,605, Cl. 139-12.000.

Tohoru, Tomoshige: *See—*
Kashiwa, Norio; Tohoru, Tomoshige; Kobayashi, Toshio; and Honma, Shiro, 3,705,886.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Yamada, Hisashi; Tajiri, Hisao; and Nishizawa, Mitsugu, 3,706,023.

Tollison, James W.; and Kelley, Joe, to Riegel Textile Corporation. Loom attachments for making fringes. 3,705,607, Cl. 139-116.000.

Tomisawa, Norio, to Nippon Gakki Seizo Kabushiki Kaisha. System for controlling ton.. modifying circuits by muscular voltage in electronic musical instrument. 3,705,948, Cl. 84-1.240.

Toomer, Charles H. Device for use in picking berries, and the like. 3,705,485, Cl. 56-330.000.

Toomey, Thomas J. Combination kitchen and clothes trailer. 3,705,743, Cl. 296-23.00r.

Touchy, Wolfgang; and Bungenstab, Eckart, to Siemens Aktiengesellschaft. Growth layer of semiconductor compounds produced by melt epitaxy. 3,705,825, Cl. 148-1.500.

Towson, Arthur L.: *See—*
Jarrell, Virgil N.; and Towson, Arthur L., 3,705,483.

Toyota Jidosha Kabushiki Kaisha: *See—*
Ochiai, Takeshi, 3,705,748.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
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Trenne, Myron U.: *See—*
Colling, Ronald L.; and Trenne, Myron U., 3,705,639.

Tridilosa International, Inc.: *See—*
Yeffal-Rueda, Manuel, 3,705,473.

Trist Mouldings & Seals Limited: *See—*
Millar, Thomas Ritchie, 3,705,728.

Trojani, Benito Luigi. Pipped pipes and manufacturing method for said pipped pipes. 3,705,972, Cl. 219-107.000.

Troxler, Franz, to Sandoz Ltd. 4-(2-hydroxy)-3-aminopropoxy)-indole derivatives. 3,705,907, Cl. 260-326.14r.

Tsukihashi, Kazunobu. Puncher for marking devices. 3,705,683, Cl. 234-87.000.

Tsumaki, Tatsuichi: *See—*
Ishikawa, Tatsuo; Hiruta, Shiro; Wakabayashi, Teruomi; Inamoto, Yoshihiko; Kusunose, Tethiro; Tsumaki, Tatsuichi; and Ota, Masami, 3,705,877.

Tuft, Richard A.: *See—*
Corey, Earl E.; Tuft, Richard A.; and Woodward, Jason H., 3,706,022.

Tupitsyn, Konstantin Konstantinovich: *See—*
Sudnishnikov, Boris Vasilievich; Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tupitsyn, Konstantin Konstantinovich; and Plavskikh, Vladimir Dmitrievich, 3,705,633.

Turbo Machine Company: *See—*
Carruthers, George A., 3,705,487.
Sholly, William C., Jr.; and Carruthers, George A., 3,705,488.

Turek, Robert F., to Bowles Fluidics Corporation. Fluidic flow sensing method and apparatus. 3,705,534, Cl. 73-189.000.

Tuschhoff, John V.; and Hanson, Cleo E., to Staley, A. E., Manufacturing Company. Method for producing ungelatinized starch derivatives. 3,705,891, Cl. 260-233.30r.

Tweeddale, Helen Joan: *See—*
Culvenor, Claude Charles Joseph; Edgar, John Alexander; Smith, Leslie Walter; Tweeddale, Helen Joan; Jago, Marjorie; and French, Eric Ancelot, 3,705,905.

Ulanen, Yalmar Semenovich: *See—*
Mikhelis, Konstantin Alexandrovich; Fomina, Alexandr Sergeevna; Murumets, Kirill Vladimirovich; Ulanen, Yalmar Semenovich; Kotov, Anatoly Mikhailovich; Volkov, Timofei Mikhailovich; Itsikson, Boris Semenovich; Suurmaa, Raivo Alexandrovich; Viks, Paavo Yaanvich; and Berestovsky, Georgy Grigorievich, 3,705,793.

Underwood, Max E.: *See—*
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Union Carbide Corporation: *See—*
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Atomic Energy Commission: *See—*
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Bobart, George F.; and Emerson, William A., 3,705,967.
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Unterstengofer, Gunther: *See—*
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Upjohn Company, The: *See—*
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Vadasz, Leslie L.; and Karp, Joel A., to Intel Corporation. Three-line cell for random-access integrated circuit memory. 3,706,079, Cl. 340-173.0ca.

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Van Eek, Wouter H.; Busking, Bob E.; and Van Gils, Adrianus W., to Shell Oil Company. Offshore well equipment with pedestal conductor. 3,705,623, Cl. 166-6.000.

Van Gils, Adrianus W.: *See—*
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Van Oss, Harry P. Elastomeric glazing strip and glazed frame incorporating such strip. 3,705,472, Cl. 52-400.000.

Van Zon, Cornelis, to Industriele Onderneming Wavin N.V. Device for manufacturing a plastic tube with transverse grooves. 3,705,779, Cl. 425-326.000.

Vaneldik, Jan Frederik; Wilson, Ronald Ian; Kampjes, Gerrie Richard; and Lavender, William James, to Gordon, Sherritt Mines, Limited. Electrostatic precipitator and gas sampling system. 3,705,478, Cl. 55-120.000.

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Vassar, Clyde W., to Abbey, Nelson D. Method for testing welded seam pipes in a tube mill. 3,705,458, Cl. 29-477.700.

Vaughan, Richard: *See—*
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VDO Tachometer Werke Adolf Schindling, GmbH: *See—*
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Ventron Corporation: *See—*
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Verdier, Henri, to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie. Tire having tread grooves forming double network of continuous curves. 3,705,613, Cl. 152-209.000.

Vermeulen, Geert Jan. Method for transporting a weft thread through a weaving shed and a loom for performing said method. 3,705,608, Cl. 139-127.00p.

Verner, Dalton R., to Elox Inc. Multiple gap electrical discharge machining circuit. 3,705,968, Cl. 219-69.000.

Vibra-Baths Home Products, Inc.: *See—*
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Vicario, Guido. Method and apparatus for conveying liquids to be analyzed to an automatic spectrophotometrical reading cuvette. 3,705,773, Cl. 356-180.000.

Vicentini, Giorgio; and Console, Giulio, to Boeri di A.G. Boer & C. Spraying device, more particularly for abrasive liquid compositions. 3,705,687, Cl. 239-92.000.

Vickers, Paul T., to General Motors Corporation. Regenerative gas turbine system. 3,705,492, Cl. 60-39.510.

Victor Company of Japan, Ltd.: *See—*
Kosugi, Tsuneo, 3,705,840.

Viks, Paavo Yaanovich: *See—*
Mikhelis, Konstantin Alexandrovich; Fomina, Alexandr Sergeevna; Murumets, Kirill Vladimirovich; Ulanen, Yalmar Semenovich; Kotov, Anatoly Mikhailovich; Volkov, Timofei Mikhailovich; Itsikson, Boris Semenovich; Suurmaa, Raivo Alexandrovich; Viks, Paavo Yaanvich; and Berestovsky, Georgy Grigorievich, 3,705,793.

Vikstrom, Dennis G., to General Motors Corporation. Clamp on current detector. 3,706,032, Cl. 324-127.000.

Vincent, Andrew W. Timer circuit for magnetic actuators. 3,706,011, Cl. 317-151.000.

Vishnitsky, Alexandr Lazarevich; Shapiro, Lev Mironovich; Kazantsev, Evgeny Andreevich; Shvartsman, Benyamin Markovich; Shilov, Georgy Petrovich; Nemilov, Evgeny Fedorovich; Baisupov, Izmail Abdulovich; Masterov, Vasily Fomich; and Rumyantsev, Alexandr Steanovich. Apparatus for electrochemical burring and blunting sharp edges of current-conducting articles. 3,705,848, Cl. 204-213.000.

Vissers, Herbert, to Landbouwerktwigen-en-Machine-fabriek H. Vissers N.V. Machine for digging soil. 3,705,629, Cl. 178-94.000.

Vissers, Herbert, to Landbouerktuigen-en Machinefabriek H. Vissers N.V. Agricultural implement for clod breaking. 3,705,630, Cl. 172-763.000.

Vkrainsky Nauchno Issledovatelsky Institut Selskoklrozyaistvennojo Mashvnostroerik Rospekt Gagarina: *See—*
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Vogel, Paul W.; and Silliker, John H., to Meat Technology, Inc. Meat processing. 3,705,813, Cl. 99-194.000.

Voigt, H. William, Jr.; and Banker, Bernard R., to United States of America, Army. Process to increase filler content of castable explosives, pyrotechnics, or propellants. 3,705,828, Cl. 149-19.000.

Volkov, Timofei Mikhailovich: *See—*
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Von Kulmer, Ulrich, to Maschinenfabrik Kleindienst & Co. Apparatus for washing vehicles. 3,705,435, Cl. 15-21.00r.

Vsesojuzny Nauchno Issledrvatelsky Institut Textilnogo Legkogo Mashinostroenia: *See—*
Titov, Dmitry Vladimirovich, 3,705,605.

Wada, Tokio. Labeller. 3,705,833, Cl. 156-384.000.

Wagner, Karl; Nicolay, Klaus; Schuchardt, Gerhard; and Putscher, Johann, to Agfa-Gevaert Aktiengesellschaft. Photographic apparatus with detachable source of artificial light. 3,705,539, Cl. 95-11.50r.

Wakabayashi, Teruomi: *See—*
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Walker, Gary J.: *See—*
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Wandling, Clarence R.; and Libby, Hugo L., to United States of America, Atomic Energy Commission. Multiple parameter eddy current nondestructive testing device, using plural transformation rotators to resolve each parameter. 3,706,029, Cl. 324-40.000.

Wandrisco, Joseph M., to United States Steel Corporation. Method and apparatus for determining the operating performance of wheeled vehicles on a track. 3,705,531, Cl. 73-146.000.

Wang, Ting-I: *See—*
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Wankel G.m.b.H.: *See—*
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Warren, James S., to Honeywell Inc. Burner safeguard control apparatus. 3,705,783, Cl. 431-46.000.

Waterman, John E., to Entwistle Company, The. Roller adjustment for imprinting device. 3,705,548, Cl. 101-269.000.

Watkins, Louie W., Jr., to Data Packaging Corporation. Securing device for a flotation assembly. 3,705,432, Cl. 9-8.00r.

Watts, Claude H., to Precision Metalsmiths, Inc. Metal casting processes with vacuum and pressure. 3,705,615, Cl. 164-62.000.

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Weatherman, John F.; Walker, Gary J.; and Conley, Larry R., to Micro-Technology. Apparatus for welding a conductor through cold flowable insulation. 3,705,970, Cl. 219-86.000.

Weber, Heinz, to Telesco Brophey Limited. Umbrella handle. 3,705,592, Cl. 135-20.00r.

Weber, Heinz, to Telesco Brophey Limited. Umbrella. 3,705,593, Cl. 135-20.000.

Weber, Urban A.: *See—*
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Weinbrenner, Erwin: *See—*
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Wernsing, Kenneth L. Swagable wire rope ferrule. 3,705,444, Cl. 24-114.500.

Westenberger, John Marcus, to Westric Cutting Tool, Inc. Portable cassette holder and patient support for chest X-rays. 3,705,984, Cl. 250-50.000.

Westerlund, Herbert A.: *See—*
Westerlund, Robert E.; and Westerlund, Herbert A., 3,705,737.

Westerlund, Robert E.; and Westerlund, Herbert A., to Construction Forms, Inc. Pipe coupling with releasable connector. 3,705,737, Cl. 285-365.000.

Westinghouse Electric Corporation: *See—*
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Weyerhaeuser Company: *See—*
Stiles, Lester W., 3,705,847.

Wham-O Manufacturing Company: *See—*
Cox, Robert P.; and Fish, Leonard A., 3,705,669.

White, Kenneth H., to Collins Radio Company. Force hub sensor for control wheel steering. 3,705,530, Cl. 73-136.00c.

White, Robert L., to General Motors Corporation. Energy absorbing bumper mount and restoration tool therefor. 3,705,741, Cl. 293-89.000.

Whitten, Derrill Gene; and Vanmeurs, Peter, to Shell Oil Company. Steam drive oil recovery process. 3,705,625, Cl. 166-252.000.

Wieland, Theodor; Konz, Wilhelm; Faesel, Jurgen; and Lewalter, Jurgen, to Boehringer Ingelheim G.m.b.H. Cyclic decapeptides and methods of synthesizing the same. 3,705,887, Cl. 260-112.500.

Wilhelm Gesenscheidt Kommanditgesellschaft: *See*—
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Wilhelmsen, Jens, to A/S Fredriksstad mek. Verksted. Ship hull for ice-breaking ship. 3,705,564, Cl. 114-41.000.

Willett, Harold A., to Cane Machinery & Engineering Company, Inc. Sugar cane topper for V-cutter harvester. 3,705,481, Cl. 56-13.900.

Williams, Keith S., to United States of America, Army. Flash suppressor assembly for Gatling-type machine guns. 3,705,529, Cl. 89-14.00b.

Wilmot, Richard D.; and Ballantyne, Jack R., to Hughes Aircraft Company. Moving target platform digital video mapper. 3,705,936, Cl. 343-7.700.

Wilson, Eric John; Brigg, Alan Henry; and Timmons, Eric, to English Steel Corporation, Limited. Articulatable railway bogies. 3,705,555, Cl. 105-196.000.

Wilson, Ronald Ian: *See*—
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Windings, Inc.: *See*—
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Wingler, Frank; Brudermanns, Karola; and Bartl, Herbert, to Bayer Aktiengesellschaft. Thermally stable vinyl chloride copolymers. 3,705,883, Cl. 260-80.750.

Wireman, Wallace H. Dehydrator for gaseous fluids. 3,705,480, Cl. 55-275.000.

Wirtz, Walter; and Genge, Ulrich, to Demag Aktiengesellschaft. Bottom cooling device for shaft furnaces. 3,705,713, Cl. 263-44.000.

Witkowski, Henry J. Apparatus for coating building wall with foam. 3,705,777, Cl. 425-110.000.

Wittenwyler, Clifford V., to Shell Oil Company. Process for the production of bonded particles as a material of construction. 3,705,872, Cl. 260-37.0ep.

Wolf, Charles B.; and Fey, Maurice G., to Westinghouse Electric Corporation. Self-stabilizing arc heater apparatus. 3,705,975, Cl. 219-383.000.

Wolf, Ernest Robert, to Kimberly-Clark Corporation. Wrapping apparatus. 3,705,476, Cl. 53-210.000.

Wolf, Robert L.; and Mc Gann, Rodney, to Texaco Inc. Reaction propulsion engine and method of operation. 3,705,496, Cl. 60-267.000.

Wolk, Ronald H., to Hydrocarbon Research, Inc. Multi-function contacting process. 3,705,850, Cl. 208-127.000.

Wood, Peter, to Westinghouse Electric Corporation. Tap changing apparatus having a gate control tripper. 3,706,024, Cl. 323-43.50s.

Woodward, Jason H.: *See*—
Corey, Earl E.; Tuft, Richard A.; and Woodward, Jason H., 3,706,022.

Woolf, Cyril; Oxenrider, Bryce C.; and Beyleveld, Wilhelmus M., to Allied Chemical Corporation. Process for preparing fluoroperhaloalkyl isocyanates. 3,705,917, Cl. 260-453.00p.

Wormser, Joseph J.: *See*—
Austin, Frederick H.; Rogers, Jimmy D.; and Wormser, Joseph J., 3,706,038.

Worner, Karl: *See*—
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Wright, Richard Donald: *See*—
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Wu, Alan C., to H Inc. Damping technique for a memory drive scheme. 3,706,083, Cl. 340-174.0tb.

Wu, Yung-Chun. Overload and shock protective device. 3,706,007, Cl. 317-18.00d.

Xerox Corporation: *See*—
Egnaczak, Raymond K., 3,705,766.
Holliday, Robert G., 3,705,436.
Mihajlov, Vsevolod S.; and Carreira, Leonard M., 3,705,797.
Polit, Neil A.; and Enskat, Albert G., 3,705,719.
Rees, James D., 3,705,543.
Starr, Arthur T.; and David, Edwards G., 3,706,054.
Weinberger, Lester, 3,705,901.

Yamada, Hisashi; Tajiri, Hisao; and Nishizawa, Mitsugu, to Tokyo Shibaura Electric Co., Ltd. High voltage regulation circuit for television receiver. 3,706,023, Cl. 321-2.000.

Yamada, Naojiro. Flash light. 3,705,983, Cl. 240-10.600.

Yamanaka, Ichiro; and Okumura, Akihide, to Nihon Spindle Seizo Kabushiki Kaisha. Adjustable belt and pulley transmission. 3,705,517, Cl. 74-230.17a.

Yanagida, Kiyoshi, to Pioneer Electronic Corporation. Direct current motor with electrical braking device. 3,706,021, Cl. 318-302.000.

Yeffal-Rueda, Manuel, to Tridilosa International, Inc. Structural slab members. 3,705,473, Cl. 52-650.000.

Yerouchalmi, David. Axial pouring-nozzle structure for rotary melting furnace. 3,705,712, Cl. 263-33.00r.

Yoshida, Mikihiko; Mitsuhashi, Masakazu; and Hidao, Mamoru, to Hayashibara Company. Process for avoiding staling and improving the quality of bread. 3,705,811, Cl. 99-91.000.

Yoshikawa, Tatsuya: *See*—
Mori, Takashi; and Yoshikawa, Tatsuya, 3,706,077.

Yoshimura, Noboru, to Aisin Seiki Kabushiki Kaisha. Door latch mechanisms. 3,705,738, Cl. 292-216.000.

Young, Einar T., to Sun Oil Company. Motor fuel dispensing apparatus. 3,705,596, Cl. 137-100.000.

Yusa, Makoto: *See*—
Shibata, Minoru; Yusa, Makoto; Nakata, Hisao; and Harada, Michisuke, 3,705,866.

Zajac, Ronald E.: *See*—
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Zecher, Wilfried: *See*—
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Zeiss-Stiftung Carl; d/b/a Zeiss, Carl: *See*—
Staeudle, Hans, 3,706,093.

Zenker, Karol R., to Factory Mutual Research Corporation. Discharge head utilizing a pressure-responsive detent mechanism. 3,705,691, Cl. 239-452.000.

Ziaylek, Theodore, Jr. Miniaturized forcible entry tool. 3,705,430, Cl. 7-9.000.

Ziborov, Pavel Efimovich: *See*—
Okorokov, Ivan Fedorovich; Bogdanov, Gorgy Porfirievich; Sorokin, Konstantin Alexandrovich; Onischenko, Anatoly Fedorovich; Ziborov, Pavel Efimovich; and Perstnev, Samuil Nisonovich, 3,705,559.

Zuhlke, Gerhard, to Schweiger & Schweizer AG. Apparatus for framing a foil portion. 3,705,454, Cl. 29-208.00d.

Zwahlen, Guenther; Retch, Ernst; and Schoohf, Karl Ewald, to Ciba-Geigy AG. Pigment preparation. 3,705,816, Cl. 106-308.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF DECEMBER, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Davis, Jack G. : *See*—
Doremus, Gordon L., and Davis. Re. 27,529.
Doremus, Gordon L., and Jack G. Davis. Galvanic anode. Re. 27,529, 12–12–72, Cl. 204—197.
Marotta, Nicholas G. : *See*—
Murray, Daniel G., Marotta, and Boettger. Re. 27,531.
Midland Manufacturing Co., Inc. : *See*—
Mitchell, James L. Re. 27,530.
Mitchell, James L., to Midland Manufacturing Co., Inc. Land leveling implement. Re. 27,530, 12–12–72, Cl. 172—780.
Morris, Harold D., to Systron-Donner Corp. Position detecting transducer. Re. 27,532, 12–12–72. Cl. 73—517.
Murray, Daniel G., N. G. Marotta, and R. M. Boettger, to National Starch and Chemical Corp. Amylose coated, fried potato product and process for preparing the same. Re. 27,531, 12–12–72. Cl. 99—100.
National Starch and Chemical Corp. : *See*—
Murray, Daniel G., Marotta, and Boettger. Re. 27,531.
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Morris, Harold D. Re. 27,532.

LIST OF PLANT PATENTEES

Cole Nursery Co., Inc. : *See*—
Collins, William H. 3,267.
Collins, William H., to Cole Nursery Co., Inc. Flowering crabapple tree. 3,267, 12–12–72. Cl. 34.
Klehm, Carl G. Peony plant. 3,268, 12–12–72. Cl. 68.
Klehm, Carl G. Peony plant. 3,269, 12–12–72. Cl. 68.
Klehm, Carl G. Peony plant. 3,270, 12–12–72. Cl. 68.
Klehm, Carl G. Peony plant. 3,271, 12–12–72. Cl. 68.

LIST OF DESIGN PATENTEES

AMF Incorporated : *See*—
Purdy, Frederick E. 225,484.
Acme General Corp. : *See*—
Giandomenico, Nicholas. 225,393.
Giandomenico, Nicholas. 225,394.
Adlerwerke vormal Heinrich Kleyer A.G. : *See*—
Dietrich, Gerhard, and Mamet. 225,462.
Aeropro Enterprises, Inc. : *See*—
Richardson, Benjamin F. 225,422.
Alexander, William C., and F. R. Nebiker, to Goodyear Aerospace Corp. Aerodynamic decelerator. 225,464, 12–12–72, Cl. D71—1.
Altobello, Emil A. Grated vault cover. 225,459, 12–12–72, Cl. D60—2.
Altobello, Emil A. Vault cover grating. 225,460, 12–12–72, Cl. D60—2.
American Home Products Corp. : *See*—
Cleeland, Raymond T. 225,434.
American Sterilizer Co. : *See*—
Brendgord, Thomas. 225,403.
Anchor Hocking Corp. : *See*—
Schaefer, Howard A. 225,450.
Anderson, Eldon L., Jr., to General Electric Co. Floodlight. 225,447. 12–12–72. Cl. D48—20.
Anderson Safeway Guard Rail Corp. : *See*—
Jones, Clifton E. 225,488.
Annis, Sidney. Garment bag. 225,470, 12–12–72, Cl. D87—1.
Annis, Sidney. Garment bag. 225,480, 12–12–72, Cl. D87—1.
Annis, Sidney. Garment bag. 225,481, 12–12–72, Cl. D87—1.
Anthony, Benjamin G., to Promotions International, Inc. Milk carton holder. 225,435, 12–12–72, Cl. D44—21.
Averitt, Marnie C. : *See*—
Wyman, Dennis G., and Averitt. 225,420.
Bamberger, Michael W. Combined head and foot gear carrying case. 225,482. 12–12–72. Cl. D87—5.
Bart, Philip D. Drinking straw. 225,486, 12–12–72, Cl. D94—3.
Baughan, Dorothy J., to Woodrow W. Baughan and Anthony V. Sorci. Trophy or similar article. 225,415. 12–12–72. Cl. D29—28.
Baughan, Woodrow W., and Anthony V. Sorci : *See*—
Baughan, Dorothy J. 225,415.
Block China Corp. : *See*—
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Gulotta, Gerald. 225,432.
Bolen, Hugh R., Jr., to Magnetic Forming Corp. Gaff. 225,-399. 12–12–72. Cl. D22—22.
Brandenburger, Nelda H. Sculpture. 225,414, 12–12–72, Cl. D29—23.
Braun AG : *See*—
Rams, Dieter. 225,448.
Brendgord, Thomas, to American Sterilizer Co. Surgeons scrub sink. 225,403, 12–12–72, Cl. D23—58.
Brooks, Paul E. Pocket comb. 225,474. 12–12–72. Cl. D86—8.
Brown, Jane L. Puzzle or similar article. 225,425, 12–12–72, Cl. D34—15.
Burke, George K., and K. Raines, to Burron Medical Products, Inc. Medical equipment tray. 225,467, 12–12–72, Cl. D83—1.
Burke, George K., and K. Raines, to Burron Medical Products, Inc. Medical equipment tray. 225,468, 12–12–72, Cl. D83—1.
Burke, John W. : *See*—
Gray, Bernard N., and Burke. 225,469.
Burron Medical Products, Inc. : *See*—
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Burke, George K., and Raines. 225,468.
Carey, Lewis S., and G. L. Mansour. Mobile fluoroscopic unit. 225,473, 12–12–72, Cl. D83—1.
Carter, Donald J., a fractional part interest to Frank Esposito. Wristlet for a bowler. 225,389. 12–12–72, Cl. D2—27.
Chaffee, Robert B., to Honeywell Inc. Card reader or similar article. 225,411, 12–12–72, Cl. D26—5.
Cleeland, Raymond T., to American Home Products Corp. Dinner plate or similar article. 225,434, 12–12–72, Cl. D44—15.
Collins, Delmas E., to Jones-Zylon, Inc. Carafe. 225,436, 12–12–72, Cl. D44—21.
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Scoggins, Allen W. Telephone mount. 225,413, 12–12–72, Cl. D26—14.
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77.5AC 3,705,879
77.5R 3,705,880
78L 3,705,881
79 3,705,882
80.75 3,705,883
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85.3 3,705,886
93.7 3,705,885
112.5 3,705,887
151 3,705,888
210R 3,705,889
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233.3R 3,705,891
239.1 3,705,892
239.55D 3,705,893
240D 3,705,895
240E 3,705,896
240R 3,705,894
243C 3,705,897
247.1 3,705,898
256.4N 3,705,899
279R 3,705,901
284 3,705,900
295C 3,705,902
302R 3,705,869
307R 3,705,903
326.11 3,705,906
326.14R 3,705,907
326.5A 3,705,904
326.5R 3,705,905
327M 3,705,908
329.3 3,705,909
332.2R 3,705,910
349 3,705,911
391 3,705,913
396R 3,705,914
397.2 3,705,912
397.5 3,705,915
429.3 3,705,916
453P 3,705,917
464 3,705,918
491 3,705,919
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531R 3,705,921
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608 3,705,923
614R 3,705,924
643D 3,705,925
683R 3,705,926
923 3,705,927
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951 3,705,929
964 3,705,930

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32R 3,705,711
33R 3,705,712
44 3,705,713
47R 3,705,714

CLASS 264

89 3,705,931
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117 3,705,933
219 3,705,934
257 3,705,935

CLASS 266

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24 3,705,717

CLASS 267

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CLASS 271

3 3,705,719

CLASS 272

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54C 3,705,722
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95 3,705,724
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135B 3,705,727
141A 3,705,726

CLASS 277

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11.13L 3,705,729
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53 3,705,735
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CLASS 292

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CLASS 293

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CLASS 296

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CLASS 297

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252B 3,705,990
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159 3,705,752
240 3,705,753

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178 3,705,995
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237 3,705,997

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197 3,705,999
214 3,706,000
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83 3,706,006

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100 3,706,010
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231 3,706,013
234R 3,706,014
3,706,015

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138 3,706,019
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34MA 3,706,026
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40 3,706,029
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446 3,706,042

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113A 3,706,052

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CLASS 335

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262 3,706,063

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274 3,706,090
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347DD 3,706,091

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7.7 3,705,936
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180 3,705,773

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CLASS 417

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CLASS 423

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283 3,705,945

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110 3,705,777
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326 3,705,779
389 3,705,780

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116 3,705,784
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	234	225,390			225,407			225,425			225,441	D57—	1	225,458		10	225,475
	250	225,391			225,408	D35—	3	225,424			225,442	D60—	2	225,459			225,476
D 3—	9	225,392			225,409	D42—	1	225,426		16	225,443			225,460			225,477
D 8—	143	225,393			225,410		7	225,427			225,444	D64—	11	225,461			225,478
		225,394		5	225,411		8	225,428			225,445			225,462	D87—	1	225,470
D 9—	40	225,395		14	225,412			225,429			225,446		12	225,463			225,479
D13—	6	225,396			225,413	D44—	9	225,431	D48—	20	225,447	D71—	1	225,464			225,480
D14—	3	225,397	D29—	23	225,414			225,432		27	225,448			225,465			225,481
D16—	1	225,398		25	225,415		15	225,430			225,449	D83—		225,466		5	225,482
D22—	22	225,399	D30—	1	225,416			225,433		32	225,450			225,467	D90—	8	225,483
D23—	3	225,401		2	225,417			225,434	D49—	1	225,451			225,468		16	225,484
	7	225,400	D34—	4	225,418		21	225,435		35	225,452			225,469		20	225,485
	20	225,402		5	225,419			225,436	D52—	7	225,453			225,471	D94—	3	225,486
	58	225,403			225,420			225,437	D54—	12	225,454			225,472	D95—		225,487
	94	225,404			225,421	D45—	10	225,438			225,455			225,473	D96—	12	225,488
D26—	1	225,405		15	225,422			225,439			225,456						

CLASSIFICATION OF PLANTS

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	3,705,590		3,705,557		3,705,954		3,705,556		3,706,006		3,706,076
	3,706,048		3,705,622		3,705,957		3,705,617		3,706,032		3,706,081
	3,706,050		3,705,733		3,705,987		3,705,691		3,706,072		3,706,082
4 :	3,705,706		3,705,857		3,705,990		3,705,714	27 :	3,705,636		3,706,091
	3,705,980		3,705,943		3,706,039		3,705,739		3,705,637	36 :	3,705,462
	3,706,043		3,706,025	18 :	3,705,442		3,705,758		3,706,080		3,705,472
5 :	3,705,661		3,706,087		3,705,521		3,705,804	28 :	Re.27,530		3,705,483
6 :	Re.27,532	10 :	3,705,551		3,705,545		3,705,814	29 :	3,705,724		3,705,497
	3,705,468		3,705,772		3,705,581		3,705,826		3,705,933		3,705,499
	3,705,471		3,705,859		3,705,642		3,705,956		3,706,052		3,705,500
	3,705,475		3,705,911		3,705,662		3,705,960	30 :	3,705,582		3,705,505
	3,705,479		3,705,916		3,705,688		3,706,009	33 :	3,706,061		3,705,541
	3,705,486		3,705,919		3,705,717		3,706,012	34 :	3,705,467		3,705,543
	3,705,496		3,705,938		3,705,892		3,706,022		3,705,477		3,705,571
	3,705,516		3,705,939		3,705,894		3,706,042		3,705,485		3,705,578
	3,705,524	12 :	3,705,501		3,705,897		3,706,058		3,705,494		3,705,591
	3,705,566		3,705,504		3,705,900		3,706,083		3,705,523		3,705,664
	3,705,585		3,705,577		3,705,946		3,706,084		3,705,525		3,705,668
	3,705,586		3,705,689		3,706,016		3,706,092		3,705,528		3,705,696
	3,705,598		3,705,836		3,706,066		3,706,095		3,705,550		3,705,698
	3,705,653		3,705,935		3,706,089	26 :	3,705,436		3,705,552		3,705,716
	3,705,659		3,706,030	19 :	Re.27,531		3,705,448		3,705,665		3,705,755
	3,705,660		3,706,075		3,705,493		3,705,465		3,705,675		3,705,762
	3,705,674	13 :	3,705,440		3,705,529		3,705,492		3,705,681		3,705,763
	3,705,677		3,705,654		3,705,530		3,705,509		3,705,726		3,705,766
	3,705,686		3,705,701		3,705,631		3,705,513		3,705,806		3,705,771
	3,705,722		3,705,780		3,705,656		3,705,522		3,705,810		3,705,790
	3,705,742		3,705,834		3,705,754		3,705,554		3,705,822		3,705,797
	3,705,761		3,705,837		3,706,056		3,705,558		3,705,828		3,705,799
	3,705,769	15 :	3,705,611		3,706,070		3,705,632		3,705,849		3,705,800
	3,705,860	16 :	3,705,812	20 :	3,705,560		3,705,638		3,705,850		3,705,801
	3,705,901	17 :	3,705,437		3,705,788		3,705,639		3,705,853		3,705,802
	3,705,924		3,705,464	21 :	3,706,001		3,705,666		3,705,855		3,705,803
	3,705,936		3,705,469		3,706,018		3,705,685		3,705,872		3,705,852
	3,705,970		3,705,574	22 :	3,705,481		3,705,694		3,705,888		3,705,854
	3,705,982		3,705,583	23 :	3,705,463		3,705,697		3,705,895		3,705,858
	3,705,984		3,705,584		3,706,086		3,705,741		3,705,906		3,705,869
	3,705,986		3,705,599	24 :	3,705,474		3,705,749		3,705,910		3,705,870
	3,706,002		3,705,648		3,705,510		3,705,753		3,705,917		3,705,898
	3,706,071		3,705,649		3,705,534		3,705,783		3,705,918		3,705,913
	3,706,079		3,705,669		3,705,680		3,705,791		3,705,920		3,705,931
	3,706,085		3,705,711		3,705,700		3,705,843		3,705,953		3,705,942
	3,706,090		3,705,715		3,705,743		3,705,856		3,705,959		3,705,952
	3,706,096		3,705,719		3,705,967		3,705,863		3,705,965		3,705,964
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8 :	3,705,498		3,705,727	25 :	3,705,432		3,705,889		3,706,000		3,706,011
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	3,705,708		3,705,813		3,705,490		3,705,951		3,706,014		3,706,036
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U. S. DEPARTMENT OF COMMERCE
Peter G. Peterson, *Secretary*

PATENT OFFICE
Robert Gottschalk, *Commissioner*